NexGen Energy Ltd.

Rook I Project

Supplemental Information for the Rook I Project Environmental Risk Assessment

May 2026

Table 1: CNSC Staff Inquiries on the Rook I Project Environmental Risk Assessment and NexGen Follow-up Responses

<table>
<tr><th>CNSC Licensing Staff Inquiry</th><th>NexGen Follow-up Response</th></tr>
<tr><td>CNSC staff acknowledged that the ERA predicted the exposure levels of non-radiological constituents of potential concern to human receptors for various media including water (internal), soil (internal), sediment (internal), and biota. However, CNSC staff noted that the ERA did not appear to include all dermal pathways within the exposure level predictions and requested further clarification.

After follow-up discussions between CNSC staff and NexGen, it was noted that soil and sediment dermal pathways were evaluated quantitatively, though the dermal exposure in water was not considered as it represented less than 10% of the oral dose component. However, CNSC staff further noted that the guidance considered for assessing the dermal pathway for water was related to drinking water and bathing/showering, whereas the assessment should consider the swimming activity as this is how receptors would be exposed.</td><td>In response to the communications with CNSC staff, NexGen updated the IMPACT model to quantitatively evaluate the dermal-water pathway for the Human Health Risk Assessment. NexGen provided two deliverables: a table that showed the comparison of the non-carcinogen dose from dermal-water and oral-water pathways (using the dose estimated for the subsistence harvester at Patterson Lake South Arm in the Application Case as an example) and a new Table 5-7 of Section 5.2.4.1.1 of the ERA that presented the updated non-carcinogen doses to human receptors during Operations for the Application Case and Upper Bound Scenario (Appendix 1).

In the first deliverable (presented in the table below), the comparison showed that dermal exposure in water is predicted to contribute less than 3% of the dose from the oral (drinking water) pathway for the adult, and contribute less than 1% of the dose from the oral (drinking water) pathway for the one-year-old. The same ratio applies to humans at other locations in all assessed scenarios.

<table>
<tr><th rowspan="2">Human</th><th rowspan="2">Constituent of Potential Concern</th><th>Permeability Coefficient K_p[(a)]</th><th>Dose from Oral-water Pathway (Internal)[(b)]</th><th>Dose from Dermal-water Pathway (External)[(b)]</th><th>Dermal/Oral</th></tr>
<tr><th>(cm/hr)</th><th>mg/kg/d</th><th>mg/kg/d</th><th>%</th></tr>
<tr><td rowspan="4">Adult</td><td>Cobalt</td><td>4.0E-04</td><td>9.32E-06</td><td>1.05E-07</td><td>1.1%</td></tr>
<tr><td>Copper</td><td>1.0E-03</td><td>1.30E-05</td><td>3.65E-07</td><td>2.8%</td></tr>
<tr><td>Molybdenum</td><td>1.0E-03</td><td>4.51E-06</td><td>1.27E-07</td><td>2.8%</td></tr>
<tr><td>Uranium</td><td>1.0E-03</td><td>2.04E-06</td><td>5.72E-08</td><td>2.8%</td></tr>
<tr><td rowspan="4">One-Year-Old</td><td>Cobalt</td><td>4.0E-04</td><td>1.04E-05</td><td>3.72E-08</td><td>0.4%</td></tr>
<tr><td>Copper</td><td>1.0E-03</td><td>1.45E-05</td><td>1.29E-07</td><td>0.9%</td></tr>
<tr><td>Molybdenum</td><td>1.0E-03</td><td>5.04E-06</td><td>4.49E-08</td><td>0.9%</td></tr>
<tr><td>Uranium</td><td>1.0E-03</td><td>2.27E-06</td><td>2.03E-08</td><td>0.9%</td></tr>
</table>
(a) Kp values are from the US EPA (2004) manual.
(b) Dose estimated for the subsistence harvester at Patterson Lake South Arm in Application Case.

The second deliverable (Appendix 1) showed that no exceedances of the incremental hazard quotient benchmark of 0.2 per medium for the Project were identified and the contribution from dermal pathways to the total dose and risk remains small. Therefore, the conclusions of the ERA remain unchanged; the Project will be protective of people and the environment. An updated Table 5-7 of Section 5.2.4.1.1 of the ERA will be added to the next version of the ERA to be submitted to the CNSC for the licence to operate application.

<u>References</u>

US EPA. 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.</td></tr>
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Table 1: CNSC Staff Inquiries on the Rook I Project Environmental Risk Assessment and NexGen Follow-up Responses

CNSC Licensing Staff Inquiry	NexGen Follow-up Response
CNSC staff noted that on page 3.34 of Section 3.72 of ERA Appendix A (IMPACT Model Report), there was a reference to bioaccumulation factors for aquatic plants; however, the section's focus was towards terrestrial receptors. CNSC staff asked if this was an error.	NexGen confirmed that the reference to aquatic plants was erroneous, and that the sentence should read as follows: "Refinement of the BAFs for terrestrial plants can be completed as new data are available".
CNSC Staff noted that there were certain values within the 'Source' column of Table C.23 of ERA Appendix C that were stated to be 'assumed' that actually are included within the IMPACT model report. CNSC staff requested that the table be updated to correctly reference these values within Table C.23.	NexGen has corrected the values referenced by CNSC staff and has included them in Appendix 2. Table C.23 of Appendix C will be updated in the next version of the ERA to be submitted to the CNSC for the licence to operate application.
CNSC staff requested that a sample calculation for the arsenic incremental lifetime cancer risk be added to Appendix C of the ERA.	NexGen provided a sample calculation for the arsenic incremental lifetime cancer risk, which is provided in Appendix 3 and will form a new Table C.26 of Appendix C of the next version of the ERA to be submitted to the CNSC for the licence to operate application.

BAF = bioaccumulation factor; CNSC = Canadian Nuclear Safety Commission; ERA = environmental risk assessment; US EPA = United States Environmental Protection Agency; % = percent; cm/hr = centimetre per hour; K_p = chemical specific permeability coefficient (cm/hr); mg/kg/d = milligrams per kilogram per day.

Appendix 1

Table 5-7: Estimated Non-carcinogen Doses to Human Receptors – Operations – Application Case and Upper Bound Scenario (updated)

Human		Dose by Pathway Project Lifespan (mg/kg/d)											Dose by Pathway Far Future (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-08	1.01E-08	4.64E-08	0.00E+00	1.15E-05	7.21E-06	1.97E-04	2.25E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-07	1.76E-08	4.82E-07	0.00E+00	3.81E-04	1.15E-04	1.66E-02	1.71E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-08	4.54E-09	2.08E-08	0.00E+00	3.39E-08	4.10E-06	2.30E-03	2.31E-03	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-07	1.35E-08	6.16E-07	0.00E+00	2.06E-06	1.15E-05	4.37E-05	5.97E-05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Application Case																						
	Cobalt	8.63E-06	9.71E-08	9.07E-09	4.15E-08	1.02E-08	4.66E-08	0.00E+00	1.25E-05	7.29E-06	2.01E-04	2.29E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	1.24E-05	3.49E-07	1.28E-08	3.51E-07	1.76E-08	4.83E-07	0.00E+00	3.99E-04	1.15E-04	1.66E-02	1.72E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	3.04E-06	8.55E-08	3.03E-09	1.39E-08	4.55E-09	2.08E-08	0.00E+00	5.00E-08	4.25E-06	2.31E-03	2.31E-03	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	1.48E-06	4.15E-08	1.66E-08	7.62E-07	1.35E-08	6.16E-07	0.00E+00	2.83E-06	2.44E-05	5.21E-05	8.22E-05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Upper Bound Scenario																						
	Cobalt	8.63E-06	9.71E-08	9.07E-09	4.15E-08	1.02E-08	4.66E-08	0.00E+00	1.25E-05	7.29E-06	2.01E-04	2.30E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	1.24E-05	3.49E-07	1.28E-08	3.51E-07	1.76E-08	4.83E-07	0.00E+00	3.99E-04	1.15E-04	1.66E-02	1.72E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	3.04E-06	8.55E-08	3.03E-09	1.39E-08	4.55E-09	2.08E-08	0.00E+00	8.31E-08	4.25E-06	2.31E-03	2.32E-03	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	1.48E-06	4.17E-08	1.66E-08	7.62E-07	1.35E-08	6.17E-07	0.00E+00	4.18E-06	2.44E-05	5.24E-05	8.39E-05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester Adult (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05
	Application Case																						
	Cobalt	9.32E-06	1.05E-07	9.05E-09	4.14E-09	1.09E-08	5.00E-09	0.00E+00	2.49E-05	1.46E-05	2.51E-04	3.00E-04	1.23E-05	1.39E-07	9.05E-09	4.14E-09	1.46E-08	6.68E-09	0.00E+00	3.30E-05	1.44E-05	2.73E-04	3.33E-04
	Copper	1.30E-05	3.65E-07	1.26E-08	3.46E-08	1.83E-08	5.02E-08	0.00E+00	7.97E-04	2.30E-04	1.77E-02	1.87E-02	1.82E-05	5.11E-07	1.26E-08	3.45E-08	2.57E-08	7.07E-08	0.00E+00	1.12E-03	2.29E-04	1.79E-02	1.92E-02
	Molybdenum	4.51E-06	1.27E-07	2.99E-09	1.37E-09	6.50E-09	2.98E-09	0.00E+00	9.99E-08	8.49E-06	1.96E-03	1.97E-03	2.18E-05	6.13E-07	2.98E-09	1.36E-09	3.26E-08	1.49E-08	0.00E+00	4.86E-07	8.18E-06	1.97E-03	2.01E-03
	Uranium	2.04E-06	5.72E-08	6.74E-09	3.09E-08	1.75E-08	8.02E-08	0.00E+00	5.65E-06	4.87E-05	6.59E-05	1.22E-04	3.31E-06	9.32E-08	5.34E-09	2.44E-08	3.02E-08	1.38E-07	0.00E+00	9.23E-06	2.38E-05	5.17E-05	8.83E-05
	Upper Bound Scenario																						
	Cobalt	9.35E-06	1.05E-07	9.05E-09	4.14E-09	1.10E-08	5.02E-09	0.00E+00	2.50E-05	1.46E-05	2.51E-04	3.00E-04	1.44E-05	1.61E-07	9.05E-09	4.14E-09	1.70E-08	7.77E-09	0.00E+00	3.84E-05	1.44E-05	2.89E-04	3.57E-04
	Copper	1.30E-05	3.66E-07	1.26E-08	3.46E-08	1.83E-08	5.03E-08	0.00E+00	7.98E-04	2.30E-04	1.77E-02	1.87E-02	2.11E-05	5.93E-07	1.26E-08	3.45E-08	2.99E-08	8.20E-08	0.00E+00	1.29E-03	2.29E-04	1.80E-02	1.96E-02
	Molybdenum	7.51E-06	2.11E-07	2.99E-09	1.37E-09	1.06E-08	4.86E-09	0.00E+00	1.66E-07	8.49E-06	1.96E-03	1.98E-03	7.51E-05	2.11E-06	2.98E-09	1.36E-09	1.12E-07	5.15E-08	0.00E+00	1.68E-06	8.18E-06	2.04E-03	2.12E-03
	Uranium	3.01E-06	8.48E-08	6.74E-09	3.09E-08	2.48E-08	1.14E-07	0.00E+00	8.34E-06	4.87E-05	6.66E-05	1.27E-04	3.32E-06	9.33E-08	5.34E-09	2.44E-08	3.02E-08	1.38E-07	0.00E+00	9.24E-06	2.38E-05	5.17E-05	8.84E-05
Subsistence Harvester One-Year-Old (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Application Case																						
	Cobalt	1.04E-05	3.72E-08	5.91E-07	7.09E-09	7.14E-07	8.56E-09	0.00E+00	2.36E-05	2.86E-05	4.85E-04	5.49E-04	1.38E-05	4.92E-08	5.91E-07	7.08E-09	9.54E-07	1.14E-08	0.00E+00	3.13E-05	2.84E-05	5.08E-04	5.83E-04
	Copper	1.45E-05	1.29E-07	8.23E-07	5.92E-08	1.20E-06	8.59E-08	0.00E+00	7.55E-04	4.54E-04	4.15E-02	4.27E-02	2.03E-05	1.81E-07	8.21E-07	5.91E-08	1.68E-06	1.21E-07	0.00E+00	1.06E-03	4.52E-04	4.16E-02	4.32E-02
	Molybdenum	5.04E-06	4.49E-08	1.95E-07	2.34E-09	4.25E-07	5.09E-09	0.00E+00	9.47E-08	1.66E-05	6.07E-03	6.09E-03	2.43E-05	2.17E-07	1.95E-07	2.33E-09	2.13E-06	2.56E-08	0.00E+00	4.61E-07	1.61E-05	6.08E-03	6.13E-03
	Uranium	2.27E-06	2.03E-08	4.41E-07	5.28E-08	1.14E-06	1.37E-07	0.00E+00	5.36E-06	8.40E-05	1.14E-04	2.08E-04	3.70E-06	3.30E-08	3.49E-07	4.18E-08	1.98E-06	2.37E-07	0.00E+00	8.75E-06	4.68E-05	1.04E-04	1.66E-04

Table 5-7: Estimated Non-carcinogen Doses to Human Receptors – Operations – Application Case and Upper Bound Scenario (updated)

Human	COPC	Dose by Pathway Project Lifespan (mg/kg/d)											Dose by Pathway Far Future (mg/kg/d)										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Upper Bound Scenario																						
	Cobalt	1.04E-05	3.73E-08	5.91E-07	7.09E-09	7.16E-07	8.59E-09	0.00E+00	2.37E-05	2.86E-05	4.85E-04	5.49E-04	1.60E-05	5.72E-08	5.91E-07	7.08E-09	1.11E-06	1.33E-08	0.00E+00	3.64E-05	2.84E-05	5.25E-04	6.07E-04
	Copper	1.45E-05	1.30E-07	8.23E-07	5.92E-08	1.20E-06	8.60E-08	0.00E+00	7.56E-04	4.54E-04	4.15E-02	4.27E-02	2.35E-05	2.10E-07	8.21E-07	5.91E-08	1.95E-06	1.40E-07	0.00E+00	1.23E-03	4.52E-04	4.18E-02	4.35E-02
	Molybdenum	8.39E-06	7.49E-08	1.95E-07	2.34E-09	6.94E-07	8.31E-09	0.00E+00	1.57E-07	1.66E-05	6.07E-03	6.10E-03	8.39E-05	7.49E-07	1.95E-07	2.33E-09	7.35E-06	8.80E-08	0.00E+00	1.59E-06	1.61E-05	6.14E-03	6.25E-03
	Uranium	3.37E-06	3.00E-08	4.41E-07	5.28E-08	1.62E-06	1.94E-07	0.00E+00	7.91E-06	8.40E-05	1.15E-04	2.12E-04	3.70E-06	3.31E-08	3.49E-07	4.18E-08	1.98E-06	2.37E-07	0.00E+00	8.76E-06	4.68E-05	1.04E-04	1.66E-04
Subsistence Harvester Adult (Beet Lake)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05
	Application Case																						
	Cobalt	8.97E-06	1.01E-07	9.05E-09	4.14E-09	1.06E-08	4.83E-09	0.00E+00	2.40E-05	1.46E-05	2.47E-04	2.94E-04	1.06E-05	1.19E-07	9.05E-09	4.14E-09	1.25E-08	5.72E-09	0.00E+00	2.83E-05	1.44E-05	2.54E-04	3.08E-04
	Copper	1.27E-05	3.57E-07	1.26E-08	3.46E-08	1.79E-08	4.93E-08	0.00E+00	7.79E-04	2.30E-04	1.76E-02	1.86E-02	1.54E-05	4.34E-07	1.26E-08	3.45E-08	2.18E-08	6.00E-08	0.00E+00	9.46E-04	2.29E-04	1.77E-02	1.89E-02
	Molybdenum	3.79E-06	1.07E-07	2.98E-09	1.37E-09	5.55E-09	2.54E-09	0.00E+00	8.42E-08	8.34E-06	1.95E-03	1.97E-03	1.28E-05	3.60E-07	2.98E-09	1.36E-09	1.92E-08	8.77E-09	0.00E+00	2.86E-07	8.18E-06	1.96E-03	1.98E-03
	Uranium	1.68E-06	4.73E-08	6.10E-09	2.79E-08	1.49E-08	6.84E-08	0.00E+00	4.68E-06	3.82E-05	5.55E-05	1.00E-04	2.16E-06	6.07E-08	5.27E-09	2.41E-08	1.97E-08	9.01E-08	0.00E+00	6.01E-06	2.35E-05	5.01E-05	8.19E-05
	Upper Bound Scenario																						
	Cobalt	8.98E-06	1.01E-07	9.05E-09	4.14E-09	1.06E-08	4.84E-09	0.00E+00	2.40E-05	1.46E-05	2.47E-04	2.94E-04	1.16E-05	1.31E-07	9.05E-09	4.14E-09	1.38E-08	6.29E-09	0.00E+00	3.11E-05	1.44E-05	2.60E-04	3.17E-04
	Copper	1.27E-05	3.57E-07	1.26E-08	3.46E-08	1.79E-08	4.93E-08	0.00E+00	7.80E-04	2.30E-04	1.76E-02	1.86E-02	1.69E-05	4.76E-07	1.26E-08	3.45E-08	2.40E-08	6.59E-08	0.00E+00	1.04E-03	2.29E-04	1.77E-02	1.90E-02
	Molybdenum	5.35E-06	1.50E-07	2.98E-09	1.37E-09	7.66E-09	3.51E-09	0.00E+00	1.18E-07	8.34E-06	1.96E-03	1.97E-03	4.06E-05	1.14E-06	2.98E-09	1.36E-09	6.07E-08	2.78E-08	0.00E+00	9.05E-07	8.18E-06	1.98E-03	2.03E-03
	Uranium	2.04E-06	5.74E-08	6.10E-09	2.79E-08	1.76E-08	8.07E-08	0.00E+00	5.67E-06	3.82E-05	5.57E-05	1.02E-04	2.16E-06	6.07E-08	5.27E-09	2.41E-08	1.97E-08	9.02E-08	0.00E+00	6.02E-06	2.35E-05	5.01E-05	8.19E-05
Subsistence Harvester One-Year-Old (Beet Lake)	**Base Case**																						
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Application Case																						
	Cobalt	1.00E-05	3.57E-08	5.91E-07	7.09E-09	6.89E-07	8.26E-09	0.00E+00	2.27E-05	2.86E-05	4.80E-04	5.43E-04	1.18E-05	4.21E-08	5.91E-07	7.08E-09	8.17E-07	9.79E-09	0.00E+00	2.68E-05	2.84E-05	4.89E-04	5.57E-04
	Copper	1.42E-05	1.27E-07	8.23E-07	5.92E-08	1.17E-06	8.43E-08	0.00E+00	7.39E-04	4.53E-04	4.14E-02	4.26E-02	1.72E-05	1.54E-07	8.21E-07	5.91E-08	1.43E-06	1.03E-07	0.00E+00	8.97E-04	4.52E-04	4.14E-02	4.28E-02
	Molybdenum	4.23E-06	3.78E-08	1.95E-07	2.34E-09	3.62E-07	4.34E-09	0.00E+00	7.98E-08	1.63E-05	6.06E-03	6.08E-03	1.43E-05	1.28E-07	1.95E-07	2.33E-09	1.25E-06	1.50E-08	0.00E+00	2.71E-07	1.61E-05	6.07E-03	6.10E-03
	Uranium	1.88E-06	1.68E-08	3.98E-07	4.78E-08	9.77E-07	1.17E-07	0.00E+00	4.43E-06	6.82E-05	1.07E-04	1.83E-04	2.41E-06	2.15E-08	3.44E-07	4.13E-08	1.29E-06	1.54E-07	0.00E+00	5.70E-06	4.63E-05	1.03E-04	1.59E-04
	Upper Bound Scenario																						
	Cobalt	1.00E-05	3.58E-08	5.91E-07	7.09E-09	6.91E-07	8.28E-09	0.00E+00	2.28E-05	2.86E-05	4.81E-04	5.43E-04	1.30E-05	4.64E-08	5.91E-07	7.08E-09	8.99E-07	1.08E-08	0.00E+00	2.95E-05	2.84E-05	4.94E-04	5.67E-04
	Copper	1.42E-05	1.27E-07	8.23E-07	5.92E-08	1.17E-06	8.43E-08	0.00E+00	7.39E-04	4.53E-04	4.14E-02	4.26E-02	1.89E-05	1.69E-07	8.21E-07	5.91E-08	1.57E-06	1.13E-07	0.00E+00	9.85E-04	4.52E-04	4.15E-02	4.30E-02
	Molybdenum	5.97E-06	5.33E-08	1.95E-07	2.34E-09	5.01E-07	6.00E-09	0.00E+00	1.12E-07	1.63E-05	6.06E-03	6.09E-03	4.53E-05	4.04E-07	1.95E-07	2.33E-09	3.97E-06	4.75E-08	0.00E+00	8.58E-07	1.61E-05	6.09E-03	6.16E-03
	Uranium	2.28E-06	2.03E-08	3.98E-07	4.78E-08	1.15E-06	1.38E-07	0.00E+00	5.37E-06	6.82E-05	1.07E-04	1.84E-04	2.41E-06	2.15E-08	3.44E-07	4.13E-08	1.29E-06	1.54E-07	0.00E+00	5.70E-06	4.63E-05	1.03E-04	1.59E-04
Subsistence Harvester Adult (Lloyd Lake)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05

Table 5-7: Estimated Non-carcinogen Doses to Human Receptors – Operations – Application Case and Upper Bound Scenario (updated)

		Dose by Pathway Project Lifespan (mg/kg/d)											Dose by Pathway Far Future (mg/kg/d)										
Human	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Application Case																						
	Cobalt	8.62E-06	9.69E-08	9.05E-09	4.14E-09	1.02E-08	4.66E-09	0.00E+00	2.31E-05	1.46E-05	2.45E-04	2.91E-04	8.78E-06	9.88E-08	9.05E-09	4.14E-09	1.04E-08	4.75E-09	0.00E+00	2.35E-05	1.44E-05	2.45E-04	2.92E-04
	Copper	1.24E-05	3.50E-07	1.26E-08	3.45E-08	1.76E-08	4.83E-08	0.00E+00	7.63E-04	2.30E-04	1.76E-02	1.86E-02	1.27E-05	3.57E-07	1.26E-08	3.45E-08	1.80E-08	4.94E-08	0.00E+00	7.80E-04	2.29E-04	1.76E-02	1.86E-02
	Molybdenum	3.11E-06	8.76E-08	2.98E-09	1.37E-09	4.65E-09	2.13E-09	0.00E+00	6.94E-08	8.34E-06	1.95E-03	1.97E-03	4.03E-06	1.13E-07	2.98E-09	1.36E-09	6.03E-09	2.76E-09	0.00E+00	8.99E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.49E-06	4.20E-08	5.21E-09	2.38E-08	1.36E-08	6.22E-08	0.00E+00	4.16E-06	2.36E-05	4.94E-05	7.88E-05	1.54E-06	4.32E-08	5.18E-09	2.37E-08	1.40E-08	6.42E-08	0.00E+00	4.28E-06	2.30E-05	4.92E-05	7.83E-05
	Upper Bound Scenario																						
	Cobalt	8.62E-06	9.70E-08	9.05E-09	4.14E-09	1.02E-08	4.66E-09	0.00E+00	2.31E-05	1.46E-05	2.45E-04	2.91E-04	8.89E-06	1.00E-07	9.05E-09	4.14E-09	1.05E-08	4.81E-09	0.00E+00	2.38E-05	1.44E-05	2.46E-04	2.93E-04
	Copper	1.24E-05	3.50E-07	1.26E-08	3.45E-08	1.76E-08	4.83E-08	0.00E+00	7.63E-04	2.30E-04	1.76E-02	1.86E-02	1.29E-05	3.62E-07	1.26E-08	3.45E-08	1.82E-08	5.00E-08	0.00E+00	7.89E-04	2.29E-04	1.76E-02	1.86E-02
	Molybdenum	3.27E-06	9.21E-08	2.98E-09	1.37E-09	4.86E-09	2.23E-09	0.00E+00	7.29E-08	8.34E-06	1.95E-03	1.97E-03	6.86E-06	1.93E-07	2.98E-09	1.36E-09	1.03E-08	4.70E-09	0.00E+00	1.53E-07	8.18E-06	1.96E-03	1.97E-03
	Uranium	1.53E-06	4.30E-08	5.21E-09	2.38E-08	1.38E-08	6.33E-08	0.00E+00	4.25E-06	2.36E-05	4.95E-05	7.90E-05	1.54E-06	4.32E-08	5.18E-09	2.37E-08	1.40E-08	6.42E-08	0.00E+00	4.28E-06	2.30E-05	4.92E-05	7.83E-05
Subsistence Harvester One-Year-Old (Lloyd Lake)	**Base Case**																						
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Application Case																						
	Cobalt	9.62E-06	3.44E-08	5.91E-07	7.09E-09	6.65E-07	7.97E-09	0.00E+00	2.19E-05	2.86E-05	4.79E-04	5.40E-04	9.80E-06	3.50E-08	5.91E-07	7.08E-09	6.78E-07	8.13E-09	0.00E+00	2.23E-05	2.84E-05	4.79E-04	5.41E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.27E-08	0.00E+00	7.23E-04	4.53E-04	4.13E-02	4.25E-02	1.42E-05	1.27E-07	8.21E-07	5.91E-08	1.18E-06	8.46E-08	0.00E+00	7.39E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.48E-06	3.10E-08	1.95E-07	2.34E-09	3.04E-07	3.64E-09	0.00E+00	6.58E-08	1.63E-05	6.06E-03	6.08E-03	4.50E-06	4.02E-08	1.95E-07	2.33E-09	3.94E-07	4.72E-09	0.00E+00	8.52E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.67E-06	1.49E-08	3.40E-07	4.08E-08	8.88E-07	1.06E-07	0.00E+00	3.95E-06	4.63E-05	1.02E-04	1.56E-04	1.72E-06	1.53E-08	3.38E-07	4.05E-08	9.16E-07	1.10E-07	0.00E+00	4.06E-06	4.54E-05	1.02E-04	1.55E-04
	Upper Bound Scenario																						
	Cobalt	9.62E-06	3.44E-08	5.91E-07	7.09E-09	6.65E-07	7.97E-09	0.00E+00	2.19E-05	2.86E-05	4.79E-04	5.40E-04	9.93E-06	3.54E-08	5.91E-07	7.08E-09	6.87E-07	8.23E-09	0.00E+00	2.26E-05	2.84E-05	4.80E-04	5.42E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.27E-08	0.00E+00	7.23E-04	4.53E-04	4.13E-02	4.25E-02	1.44E-05	1.28E-07	8.21E-07	5.91E-08	1.19E-06	8.56E-08	0.00E+00	7.48E-04	4.52E-04	4.13E-02	4.26E-02
	Molybdenum	3.66E-06	3.26E-08	1.95E-07	2.34E-09	3.18E-07	3.81E-09	0.00E+00	6.91E-08	1.63E-05	6.06E-03	6.08E-03	7.66E-06	6.84E-08	1.95E-07	2.33E-09	6.71E-07	8.04E-09	0.00E+00	1.45E-07	1.61E-05	6.06E-03	6.09E-03
	Uranium	1.71E-06	1.52E-08	3.40E-07	4.08E-08	9.04E-07	1.08E-07	0.00E+00	4.03E-06	4.63E-05	1.02E-04	1.56E-04	1.72E-06	1.53E-08	3.38E-07	4.05E-08	9.16E-07	1.10E-07	0.00E+00	4.06E-06	4.54E-05	1.02E-04	1.55E-04
Seasonal Resident Adult (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05
	Application Case																						
	Cobalt	9.02E-06	1.02E-07	9.05E-09	4.14E-09	1.06E-08	4.86E-09	0.00E+00	7.65E-06	1.13E-05	1.89E-04	2.18E-04	1.08E-05	1.22E-07	9.04E-09	4.14E-09	1.28E-08	5.86E-09	0.00E+00	9.19E-06	1.13E-05	1.95E-04	2.26E-04
	Copper	1.27E-05	3.59E-07	1.26E-08	3.46E-08	1.80E-08	4.94E-08	0.00E+00	2.48E-04	1.80E-04	1.65E-02	1.69E-02	1.59E-05	4.46E-07	1.26E-08	3.45E-08	2.25E-08	6.17E-08	0.00E+00	3.08E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	3.92E-06	1.10E-07	2.98E-09	1.37E-09	5.72E-09	2.62E-09	0.00E+00	2.76E-08	6.50E-06	2.41E-03	2.42E-03	1.43E-05	4.02E-07	2.98E-09	1.36E-09	2.14E-08	9.79E-09	0.00E+00	1.01E-07	6.42E-06	2.41E-03	2.43E-03
	Uranium	1.81E-06	5.10E-08	6.11E-09	2.80E-08	1.59E-08	7.28E-08	0.00E+00	1.59E-06	2.61E-05	4.39E-05	7.35E-05	2.58E-06	7.25E-08	5.27E-09	2.41E-08	2.35E-08	1.08E-07	0.00E+00	2.28E-06	1.84E-05	4.14E-05	6.49E-05
	Upper Bound Scenario																						
	Cobalt	9.04E-06	1.02E-07	9.05E-09	4.14E-09	1.06E-08	4.87E-09	0.00E+00	7.66E-06	1.13E-05	1.89E-04	2.18E-04	1.20E-05	1.35E-07	9.04E-09	4.14E-09	1.42E-08	6.52E-09	0.00E+00	1.02E-05	1.13E-05	1.99E-04	2.32E-04
	Copper	1.28E-05	3.59E-07	1.26E-08	3.46E-08	1.80E-08	4.95E-08	0.00E+00	2.48E-04	1.80E-04	1.65E-02	1.69E-02	1.76E-05	4.95E-07	1.26E-08	3.45E-08	2.49E-08	6.85E-08	0.00E+00	3.42E-04	1.80E-04	1.66E-02	1.71E-02
	Molybdenum	5.72E-06	1.61E-07	2.98E-09	1.37E-09	8.19E-09	3.75E-09	0.00E+00	4.01E-08	6.50E-06	2.41E-03	2.42E-03	4.63E-05	1.30E-06	2.98E-09	1.36E-09	6.93E-08	3.17E-08	0.00E+00	3.27E-07	6.42E-06	2.43E-03	2.48E-03
	Uranium	2.40E-06	6.75E-08	6.11E-09	2.80E-08	2.03E-08	9.28E-08	0.00E+00	2.11E-06	2.61E-05	4.41E-05	7.49E-05	2.58E-06	7.26E-08	5.27E-09	2.41E-08	2.35E-08	1.08E-07	0.00E+00	2.28E-06	1.84E-05	4.14E-05	6.49E-05

Table 5-7: Estimated Non-carcinogen Doses to Human Receptors – Operations – Application Case and Upper Bound Scenario (updated)

Human	COPC	Dose by Pathway Project Lifespan (mg/kg/d)											Dose by Pathway Far Future (mg/kg/d)										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-Year-Old (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04
	Application Case																						
	Cobalt	1.01E-05	3.60E-08	5.91E-07	7.08E-09	6.94E-07	8.31E-09	0.00E+00	7.25E-06	2.48E-05	4.15E-04	4.59E-04	1.21E-05	4.32E-08	5.91E-07	7.08E-09	8.37E-07	1.00E-08	0.00E+00	8.71E-06	2.47E-05	4.21E-04	4.68E-04
	Copper	1.42E-05	1.27E-07	8.23E-07	5.91E-08	1.18E-06	8.46E-08	0.00E+00	2.35E-04	3.94E-04	3.97E-02	4.04E-02	1.77E-05	1.58E-07	8.21E-07	5.91E-08	1.47E-06	1.06E-07	0.00E+00	2.92E-04	3.93E-04	3.98E-02	4.05E-02
	Molybdenum	4.38E-06	3.91E-08	1.95E-07	2.34E-09	3.74E-07	4.48E-09	0.00E+00	2.61E-08	1.42E-05	6.38E-03	6.40E-03	1.60E-05	1.43E-07	1.95E-07	2.33E-09	1.40E-06	1.68E-08	0.00E+00	9.58E-08	1.40E-05	6.38E-03	6.41E-03
	Uranium	2.02E-06	1.81E-08	4.00E-07	4.79E-08	1.04E-06	1.24E-07	0.00E+00	1.51E-06	5.38E-05	9.85E-05	1.58E-04	2.88E-06	2.57E-08	3.45E-07	4.13E-08	1.54E-06	1.84E-07	0.00E+00	2.16E-06	4.02E-05	9.67E-05	1.44E-04
	Upper Bound Scenario																						
	Cobalt	1.01E-05	3.61E-08	5.91E-07	7.08E-09	6.95E-07	8.33E-09	0.00E+00	7.26E-06	2.48E-05	4.15E-04	4.59E-04	1.34E-05	4.80E-08	5.91E-07	7.08E-09	9.30E-07	1.11E-08	0.00E+00	9.68E-06	2.47E-05	4.25E-04	4.74E-04
	Copper	1.42E-05	1.27E-07	8.23E-07	5.91E-08	1.18E-06	8.46E-08	0.00E+00	2.35E-04	3.94E-04	3.97E-02	4.04E-02	1.97E-05	1.75E-07	8.21E-07	5.91E-08	1.63E-06	1.17E-07	0.00E+00	3.25E-04	3.93E-04	3.98E-02	4.05E-02
	Molybdenum	6.39E-06	5.70E-08	1.95E-07	2.34E-09	5.35E-07	6.41E-09	0.00E+00	3.80E-08	1.42E-05	6.38E-03	6.40E-03	5.17E-05	4.61E-07	1.95E-07	2.33E-09	4.53E-06	5.42E-08	0.00E+00	3.10E-07	1.40E-05	6.40E-03	6.47E-03
	Uranium	2.68E-06	2.39E-08	4.00E-07	4.79E-08	1.33E-06	1.59E-07	0.00E+00	2.00E-06	5.38E-05	9.87E-05	1.59E-04	2.88E-06	2.57E-08	3.45E-07	4.13E-08	1.54E-06	1.84E-07	0.00E+00	2.16E-06	4.02E-05	9.67E-05	1.44E-04
Seasonal Resident Adult (Lloyd Lake)	**Base Case**																						
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05
	Application Case																						
	Cobalt	8.60E-06	9.68E-08	9.05E-09	4.14E-09	1.02E-08	4.65E-09	0.00E+00	7.31E-06	1.13E-05	1.88E-04	2.15E-04	8.70E-06	9.79E-08	9.04E-09	4.14E-09	1.03E-08	4.71E-09	0.00E+00	7.45E-06	1.13E-05	1.88E-04	2.16E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.83E-08	0.00E+00	3.21E-04	1.80E-04	1.65E-02	1.70E-02	1.26E-05	3.54E-07	1.26E-08	3.45E-08	1.78E-08	4.89E-08	0.00E+00	3.28E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	3.08E-06	8.67E-08	2.98E-09	1.36E-09	4.60E-09	2.11E-09	0.00E+00	2.20E-08	6.46E-06	2.41E-03	2.42E-03	3.63E-06	1.02E-07	2.98E-09	1.36E-09	5.44E-09	2.49E-09	0.00E+00	2.85E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.49E-06	4.18E-08	5.20E-09	2.38E-08	1.35E-08	6.20E-08	0.00E+00	1.64E-06	1.82E-05	4.08E-05	6.23E-05	1.51E-06	4.25E-08	5.18E-09	2.37E-08	1.38E-08	6.32E-08	0.00E+00	1.68E-06	1.81E-05	4.08E-05	6.22E-05
	Upper Bound Scenario																						
	Cobalt	8.60E-06	9.68E-08	9.05E-09	4.14E-09	1.02E-08	4.65E-09	0.00E+00	7.31E-06	1.13E-05	1.88E-04	2.15E-04	8.76E-06	9.86E-08	9.04E-09	4.14E-09	1.04E-08	4.74E-09	0.00E+00	7.54E-06	1.13E-05	1.88E-04	2.16E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.83E-08	0.00E+00	3.21E-04	1.80E-04	1.65E-02	1.70E-02	1.27E-05	3.56E-07	1.26E-08	3.45E-08	1.80E-08	4.93E-08	0.00E+00	3.32E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	3.18E-06	8.94E-08	2.98E-09	1.36E-09	4.73E-09	2.17E-09	0.00E+00	2.31E-08	6.46E-06	2.41E-03	2.42E-03	5.33E-06	1.50E-07	2.98E-09	1.36E-09	7.98E-09	3.65E-09	0.00E+00	4.85E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.51E-06	4.24E-08	5.20E-09	2.38E-08	1.37E-08	6.26E-08	0.00E+00	1.67E-06	1.82E-05	4.08E-05	6.24E-05	1.51E-06	4.25E-08	5.18E-09	2.37E-08	1.38E-08	6.32E-08	0.00E+00	1.68E-06	1.81E-05	4.08E-05	6.22E-05
Seasonal Resident One-Year-Old (Lloyd Lake)	**Base Case**																						
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04
	Application Case																						
	Cobalt	9.60E-06	3.43E-08	5.91E-07	7.08E-09	6.64E-07	7.96E-09	0.00E+00	6.91E-06	2.48E-05	4.14E-04	4.56E-04	9.71E-06	3.47E-08	5.91E-07	7.08E-09	6.72E-07	8.05E-09	0.00E+00	6.99E-06	2.47E-05	4.14E-04	4.56E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.26E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02	1.40E-05	1.25E-07	8.21E-07	5.90E-08	1.16E-06	8.37E-08	0.00E+00	2.32E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.44E-06	3.07E-08	1.95E-07	2.33E-09	3.01E-07	3.61E-09	0.00E+00	2.06E-08	1.41E-05	6.38E-03	6.40E-03	4.06E-06	3.62E-08	1.95E-07	2.33E-09	3.55E-07	4.26E-09	0.00E+00	2.43E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.66E-06	1.48E-08	3.39E-07	4.07E-08	8.85E-07	1.06E-07	0.00E+00	1.24E-06	3.98E-05	9.63E-05	1.40E-04	1.69E-06	1.51E-08	3.38E-07	4.05E-08	9.02E-07	1.08E-07	0.00E+00	1.27E-06	3.95E-05	9.63E-05	1.40E-04

Table 5-7: Estimated Non-carcinogen Doses to Human Receptors – Operations – Application Case and Upper Bound Scenario (updated)

Human		Dose by Pathway Project Lifespan (mg/kg/d)											Dose by Pathway Far Future (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Upper Bound Scenario																						
	Cobalt	9.60E-06	3.43E-08	5.91E-07	7.08E-09	6.64E-07	7.96E-09	0.00E+00	6.91E-06	2.48E-05	4.14E-04	4.56E-04	9.79E-06	3.49E-08	5.91E-07	7.08E-09	6.77E-07	8.11E-09	0.00E+00	7.05E-06	2.47E-05	4.14E-04	4.57E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.26E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02	1.42E-05	1.26E-07	8.21E-07	5.90E-08	1.17E-06	8.44E-08	0.00E+00	2.34E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.55E-06	3.17E-08	1.95E-07	2.33E-09	3.09E-07	3.71E-09	0.00E+00	2.13E-08	1.41E-05	6.38E-03	6.40E-03	5.95E-06	5.31E-08	1.95E-07	2.33E-09	5.21E-07	6.25E-09	0.00E+00	3.57E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.68E-06	1.50E-08	3.39E-07	4.07E-08	8.94E-07	1.07E-07	0.00E+00	1.26E-06	3.98E-05	9.63E-05	1.40E-04	1.69E-06	1.51E-08	3.38E-07	4.05E-08	9.02E-07	1.08E-07	0.00E+00	1.27E-06	3.95E-05	9.63E-05	1.40E-04
Permanent Resident Adult (Patterson Lake North Arm - West Basin)	**Base Case**																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05
	Application Case																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.10E-05	2.36E-07	9.07E-09	4.15E-09	2.48E-08	1.14E-08	0.00E+00	5.62E-05	1.44E-05	3.08E-04	4.00E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.21E-05	9.02E-07	1.26E-08	3.46E-08	4.54E-08	1.25E-07	0.00E+00	1.97E-03	2.30E-04	1.83E-02	2.05E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6.77E-05	1.90E-06	2.98E-09	1.36E-09	1.01E-07	4.64E-08	0.00E+00	1.51E-06	8.18E-06	2.00E-03	2.08E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.48E-05	4.15E-07	7.48E-09	3.42E-08	1.35E-07	6.16E-07	0.00E+00	4.11E-05	3.33E-05	6.76E-05	1.58E-04
	Upper Bound Scenario																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.76E-05	3.11E-07	9.07E-09	4.15E-09	3.26E-08	1.49E-08	0.00E+00	7.39E-05	1.44E-05	3.42E-04	4.58E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.20E-05	1.18E-06	1.26E-08	3.46E-08	5.94E-08	1.63E-07	0.00E+00	2.58E-03	2.30E-04	1.87E-02	2.15E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.51E-04	7.07E-06	2.98E-09	1.36E-09	3.76E-07	1.72E-07	0.00E+00	5.61E-06	8.18E-06	2.15E-03	2.42E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.48E-05	4.16E-07	7.48E-09	3.42E-08	1.35E-07	6.17E-07	0.00E+00	4.12E-05	3.33E-05	6.76E-05	1.58E-04
Permanent Resident One-Year-Old (Patterson Lake North Arm - West Basin)	**Base Case**																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Application Case																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.34E-05	8.37E-08	5.92E-07	7.10E-09	1.62E-06	1.94E-08	0.00E+00	5.33E-05	2.85E-05	5.43E-04	6.50E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.58E-05	3.20E-07	8.23E-07	5.92E-08	2.97E-06	2.13E-07	0.00E+00	1.87E-03	4.53E-04	4.20E-02	4.44E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7.56E-05	6.75E-07	1.95E-07	2.33E-09	6.62E-06	7.94E-08	0.00E+00	1.43E-06	1.61E-05	6.11E-03	6.21E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.65E-05	1.47E-07	4.89E-07	5.86E-08	8.80E-06	1.05E-06	0.00E+00	3.90E-05	6.56E-05	1.16E-04	2.47E-04
	Upper Bound Scenario																						
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.08E-05	1.10E-07	5.92E-07	7.10E-09	2.13E-06	2.56E-08	0.00E+00	7.01E-05	2.85E-05	5.77E-04	7.09E-04
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.69E-05	4.18E-07	8.23E-07	5.92E-08	3.88E-06	2.79E-07	0.00E+00	2.44E-03	4.53E-04	4.24E-02	4.53E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.81E-04	2.51E-06	1.95E-07	2.33E-09	2.46E-05	2.95E-07	0.00E+00	5.32E-06	1.61E-05	6.26E-03	6.59E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.65E-05	1.47E-07	4.89E-07	5.86E-08	8.81E-06	1.06E-06	0.00E+00	3.90E-05	6.56E-05	1.16E-04	2.47E-04

COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table 5-12: Estimated Non-carcinogen Doses to Human Receptors – Reasonably Foreseeable Development Case (Updated)

Human	Dose by Pathway RFD Case (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-08	1.01E-08	4.64E-08	0.00E+00	1.15E-05	7.21E-06	1.97E-04	2.25E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-07	1.76E-08	4.82E-07	0.00E+00	3.81E-04	1.15E-04	1.66E-02	1.71E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-08	4.54E-09	2.08E-08	0.00E+00	3.39E-08	4.10E-06	2.30E-03	2.31E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-07	1.35E-08	6.16E-07	0.00E+00	2.06E-06	1.15E-05	4.37E-05	5.97E-05
	Project Lifespan											
	Cobalt	8.63E-06	9.71E-08	9.06E-09	4.15E-08	1.02E-08	4.66E-08	0.00E+00	1.33E-05	7.29E-06	2.01E-04	2.30E-04
	Copper	1.24E-05	3.49E-07	1.28E-08	3.51E-07	1.76E-08	4.83E-07	0.00E+00	4.18E-04	1.15E-04	1.66E-02	1.72E-02
	Molybdenum	3.04E-06	8.55E-08	3.03E-09	1.39E-08	4.55E-09	2.08E-08	0.00E+00	6.14E-08	4.17E-06	2.31E-03	2.31E-03
	Uranium	1.48E-06	4.15E-08	1.68E-08	7.70E-07	1.35E-08	6.16E-07	0.00E+00	6.36E-06	2.60E-05	5.29E-05	8.82E-05
	Far future											
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester Adult (Patterson Lake South Arm)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05
	Project Lifespan											
	Cobalt	1.00E-05	1.13E-07	9.05E-09	4.14E-09	1.12E-08	5.14E-09	0.00E+00	2.65E-05	1.46E-05	2.51E-04	3.02E-04
	Copper	1.36E-05	3.83E-07	1.26E-08	3.45E-08	1.86E-08	5.11E-08	0.00E+00	8.34E-04	2.30E-04	1.77E-02	1.88E-02
	Molybdenum	5.72E-06	1.61E-07	2.98E-09	1.37E-09	7.11E-09	3.26E-09	0.00E+00	1.23E-07	8.34E-06	1.96E-03	1.97E-03
	Uranium	4.68E-06	1.32E-07	6.94E-09	3.18E-08	2.23E-08	1.02E-07	0.00E+00	1.27E-05	5.20E-05	6.74E-05	1.37E-04
	Far future											
	Cobalt	1.23E-05	1.39E-07	9.05E-09	4.14E-09	1.46E-08	6.68E-09	0.00E+00	3.30E-05	1.44E-05	2.73E-04	3.33E-04
	Copper	1.82E-05	5.11E-07	1.26E-08	3.45E-08	2.57E-08	7.07E-08	0.00E+00	1.12E-03	2.29E-04	1.79E-02	1.92E-02
	Molybdenum	2.18E-05	6.13E-07	2.98E-09	1.36E-09	3.26E-08	1.49E-08	0.00E+00	4.86E-07	8.18E-06	1.97E-03	2.01E-03
	Uranium	3.31E-06	9.32E-08	5.36E-09	2.45E-08	3.02E-08	1.38E-07	0.00E+00	9.23E-06	2.39E-05	5.18E-05	8.85E-05
Subsistence Harvester One-Year-Old (Patterson Lake South Arm)	**Base Case**											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Project Lifespan											
	Cobalt	1.12E-05	4.00E-08	5.91E-07	7.09E-09	7.34E-07	8.80E-09	0.00E+00	2.52E-05	2.86E-05	4.85E-04	5.51E-04
	Copper	1.52E-05	1.36E-07	8.22E-07	5.91E-08	1.22E-06	8.75E-08	0.00E+00	7.91E-04	4.53E-04	4.15E-02	4.27E-02
	Molybdenum	6.39E-06	5.70E-08	1.95E-07	2.34E-09	4.65E-07	5.57E-09	0.00E+00	1.16E-07	1.63E-05	6.07E-03	6.09E-03
	Uranium	5.23E-06	4.67E-08	4.54E-07	5.44E-08	1.46E-06	1.74E-07	0.00E+00	1.20E-05	8.90E-05	1.15E-04	2.24E-04

Table 5-12: Estimated Non-carcinogen Doses to Human Receptors – Reasonably Foreseeable Development Case (Updated)

Human	Dose by Pathway RFD Case (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Far future											
	Cobalt	1.38E-05	4.92E-08	5.91E-07	7.08E-09	9.54E-07	1.14E-08	0.00E+00	3.13E-05	2.84E-05	5.08E-04	5.83E-04
	Copper	2.03E-05	1.81E-07	8.21E-07	5.91E-08	1.68E-06	1.21E-07	0.00E+00	1.06E-03	4.52E-04	4.16E-02	4.32E-02
	Molybdenum	2.43E-05	2.17E-07	1.95E-07	2.33E-09	2.13E-06	2.56E-08	0.00E+00	4.61E-07	1.61E-05	6.08E-03	6.13E-03
	Uranium	3.70E-06	3.30E-08	3.50E-07	4.20E-08	1.98E-06	2.37E-07	0.00E+00	8.75E-06	4.70E-05	1.04E-04	1.66E-04
Subsistence Harvester Adult (Beet Lake)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05
	Project Lifespan											
	Cobalt	9.22E-06	1.04E-07	9.05E-09	4.14E-09	1.07E-08	4.91E-09	0.00E+00	2.45E-05	1.46E-05	2.47E-04	2.96E-04
	Copper	1.29E-05	3.64E-07	1.26E-08	3.45E-08	1.81E-08	4.98E-08	0.00E+00	7.93E-04	2.30E-04	1.76E-02	1.86E-02
	Molybdenum	4.23E-06	1.19E-07	2.98E-09	1.37E-09	5.88E-09	2.69E-09	0.00E+00	9.23E-08	8.34E-06	1.95E-03	1.97E-03
	Uranium	2.59E-06	7.29E-08	6.16E-09	2.82E-08	1.67E-08	7.65E-08	0.00E+00	7.09E-06	3.92E-05	5.60E-05	1.05E-04
	Far future											
	Cobalt	1.06E-05	1.19E-07	9.05E-09	4.14E-09	1.25E-08	5.72E-09	0.00E+00	2.83E-05	1.44E-05	2.54E-04	3.08E-04
	Copper	1.54E-05	4.34E-07	1.26E-08	3.45E-08	2.18E-08	6.00E-08	0.00E+00	9.46E-04	2.29E-04	1.77E-02	1.89E-02
	Molybdenum	1.28E-05	3.60E-07	2.98E-09	1.36E-09	1.92E-08	8.77E-09	0.00E+00	2.86E-07	8.18E-06	1.96E-03	1.98E-03
	Uranium	2.16E-06	6.07E-08	5.28E-09	2.42E-08	1.97E-08	9.01E-08	0.00E+00	6.01E-06	2.35E-05	5.01E-05	8.19E-05
Subsistence Harvester One-Year-Old (Beet Lake)	**Base Case**											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Project Lifespan											
	Cobalt	1.03E-05	3.68E-08	5.91E-07	7.09E-09	7.01E-07	8.40E-09	0.00E+00	2.33E-05	2.86E-05	4.81E-04	5.45E-04
	Copper	1.44E-05	1.29E-07	8.22E-07	5.91E-08	1.18E-06	8.51E-08	0.00E+00	7.52E-04	4.53E-04	4.13E-02	4.26E-02
	Molybdenum	4.73E-06	4.22E-08	1.95E-07	2.34E-09	3.84E-07	4.60E-09	0.00E+00	8.75E-08	1.63E-05	6.06E-03	6.08E-03
	Uranium	2.89E-06	2.58E-08	4.03E-07	4.83E-08	1.09E-06	1.31E-07	0.00E+00	6.73E-06	6.98E-05	1.07E-04	1.88E-04
	Far future											
	Cobalt	1.18E-05	4.21E-08	5.91E-07	7.08E-09	8.17E-07	9.79E-09	0.00E+00	2.68E-05	2.84E-05	4.89E-04	5.57E-04
	Copper	1.72E-05	1.54E-07	8.21E-07	5.91E-08	1.43E-06	1.03E-07	0.00E+00	8.97E-04	4.52E-04	4.14E-02	4.28E-02
	Molybdenum	1.43E-05	1.28E-07	1.95E-07	2.33E-09	1.25E-06	1.50E-08	0.00E+00	2.71E-07	1.61E-05	6.07E-03	6.10E-03
	Uranium	2.41E-06	2.15E-08	3.45E-07	4.13E-08	1.29E-06	1.54E-07	0.00E+00	5.70E-06	4.63E-05	1.03E-04	1.59E-04
Subsistence Harvester Adult (Lloyd Lake)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	2.90E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.86E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	7.80E-05

Table 5-12: Estimated Non-carcinogen Doses to Human Receptors – Reasonably Foreseeable Development Case (Updated)

Human	Dose by Pathway RFD Case (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Project Lifespan											
	Cobalt	8.64E-06	9.72E-08	9.05E-09	4.14E-09	1.02E-08	4.67E-09	0.00E+00	2.31E-05	1.46E-05	2.45E-04	2.91E-04
	Copper	1.24E-05	3.50E-07	1.26E-08	3.45E-08	1.76E-08	4.84E-08	0.00E+00	7.64E-04	2.30E-04	1.76E-02	1.86E-02
	Molybdenum	3.16E-06	8.87E-08	2.98E-09	1.37E-09	4.68E-09	2.14E-09	0.00E+00	7.02E-08	8.34E-06	1.95E-03	1.97E-03
	Uranium	1.58E-06	4.44E-08	5.19E-09	2.37E-08	1.38E-08	6.30E-08	0.00E+00	4.39E-06	2.32E-05	4.93E-05	7.86E-05
	Far future											
	Cobalt	8.78E-06	9.88E-08	9.05E-09	4.14E-09	1.04E-08	4.75E-09	0.00E+00	2.35E-05	1.44E-05	2.45E-04	2.92E-04
	Copper	1.27E-05	3.57E-07	1.26E-08	3.45E-08	1.80E-08	4.94E-08	0.00E+00	7.80E-04	2.29E-04	1.76E-02	1.86E-02
	Molybdenum	4.03E-06	1.13E-07	2.98E-09	1.36E-09	6.03E-09	2.76E-09	0.00E+00	8.99E-08	8.18E-06	1.95E-03	1.97E-03
	Uranium	1.54E-06	4.32E-08	5.18E-09	2.37E-08	1.40E-08	6.42E-08	0.00E+00	4.28E-06	2.30E-05	4.92E-05	7.82E-05
Subsistence Harvester One-Year-Old (Lloyd Lake)	**Base Case**											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	5.39E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	1.55E-04
	Project Lifespan											
	Cobalt	9.65E-06	3.45E-08	5.91E-07	7.09E-09	6.66E-07	7.99E-09	0.00E+00	2.19E-05	2.86E-05	4.79E-04	5.40E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.28E-08	0.00E+00	7.24E-04	4.53E-04	4.13E-02	4.25E-02
	Molybdenum	3.52E-06	3.15E-08	1.95E-07	2.34E-09	3.06E-07	3.66E-09	0.00E+00	6.65E-08	1.63E-05	6.06E-03	6.08E-03
	Uranium	1.76E-06	1.57E-08	3.39E-07	4.06E-08	8.99E-07	1.08E-07	0.00E+00	4.16E-06	4.57E-05	1.02E-04	1.55E-04
	Far future											
	Cobalt	9.80E-06	3.50E-08	5.91E-07	7.08E-09	6.78E-07	8.13E-09	0.00E+00	2.23E-05	2.84E-05	4.79E-04	5.41E-04
	Copper	1.42E-05	1.27E-07	8.21E-07	5.91E-08	1.18E-06	8.46E-08	0.00E+00	7.39E-04	4.52E-04	4.13E-02	4.25E-02
	Molybdenum	4.50E-06	4.02E-08	1.95E-07	2.33E-09	3.94E-07	4.72E-09	0.00E+00	8.52E-08	1.61E-05	6.06E-03	6.08E-03
	Uranium	1.72E-06	1.53E-08	3.38E-07	4.05E-08	9.16E-07	1.10E-07	0.00E+00	4.06E-06	4.54E-05	1.02E-04	1.55E-04
Seasonal Resident Adult (Patterson Lake South Arm)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05
	Project Lifespan											
	Cobalt	9.45E-06	1.06E-07	9.05E-09	4.14E-09	1.08E-08	4.94E-09	0.00E+00	7.96E-06	1.13E-05	1.89E-04	2.18E-04
	Copper	1.31E-05	3.69E-07	1.26E-08	3.45E-08	1.82E-08	5.00E-08	0.00E+00	2.55E-04	1.80E-04	1.65E-02	1.69E-02
	Molybdenum	4.65E-06	1.31E-07	2.98E-09	1.36E-09	6.08E-09	2.78E-09	0.00E+00	3.19E-08	6.46E-06	2.41E-03	2.42E-03
	Uranium	3.40E-06	9.57E-08	6.24E-09	2.85E-08	1.88E-08	8.58E-08	0.00E+00	2.94E-06	2.71E-05	4.42E-05	7.79E-05
	Far future											
	Cobalt	1.08E-05	1.22E-07	9.04E-09	4.14E-09	1.28E-08	5.86E-09	0.00E+00	9.19E-06	1.13E-05	1.95E-04	2.26E-04
	Copper	1.59E-05	4.46E-07	1.26E-08	3.45E-08	2.25E-08	6.17E-08	0.00E+00	3.08E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	1.43E-05	4.02E-07	2.98E-09	1.36E-09	2.14E-08	9.79E-09	0.00E+00	1.01E-07	6.42E-06	2.41E-03	2.43E-03
	Uranium	2.58E-06	7.25E-08	5.29E-09	2.42E-08	2.35E-08	1.08E-07	0.00E+00	2.28E-06	1.85E-05	4.14E-05	6.49E-05

Table 5-12: Estimated Non-carcinogen Doses to Human Receptors – Reasonably Foreseeable Development Case (Updated)

Human	Dose by Pathway RFD Case (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-Year-Old (Patterson Lake South Arm)	**Base Case**											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04
	Project Lifespan											
	Cobalt	1.06E-05	3.77E-08	5.91E-07	7.08E-09	7.06E-07	8.46E-09	0.00E+00	7.54E-06	2.48E-05	4.15E-04	4.59E-04
	Copper	1.47E-05	1.31E-07	8.22E-07	5.91E-08	1.19E-06	8.55E-08	0.00E+00	2.42E-04	3.93E-04	3.97E-02	4.04E-02
	Molybdenum	5.19E-06	4.63E-08	1.95E-07	2.33E-09	3.98E-07	4.76E-09	0.00E+00	3.03E-08	1.41E-05	6.38E-03	6.40E-03
	Uranium	3.80E-06	3.39E-08	4.07E-07	4.88E-08	1.23E-06	1.47E-07	0.00E+00	2.78E-06	5.57E-05	9.87E-05	1.63E-04
	Far future											
	Cobalt	1.21E-05	4.32E-08	5.91E-07	7.08E-09	8.37E-07	1.00E-08	0.00E+00	8.71E-06	2.47E-05	4.21E-04	4.68E-04
	Copper	1.77E-05	1.58E-07	8.21E-07	5.90E-08	1.47E-06	1.06E-07	0.00E+00	2.92E-04	3.93E-04	3.98E-02	4.05E-02
	Molybdenum	1.60E-05	1.43E-07	1.95E-07	2.33E-09	1.40E-06	1.68E-08	0.00E+00	9.58E-08	1.40E-05	6.38E-03	6.41E-03
	Uranium	2.88E-06	2.57E-08	3.45E-07	4.14E-08	1.54E-06	1.84E-07	0.00E+00	2.16E-06	4.03E-05	9.67E-05	1.44E-04
Seasonal Resident Adult (Lloyd Lake)	**Base Case**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	7.27E-06	1.13E-05	1.88E-04	2.15E-04
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	2.41E-04	1.80E-04	1.65E-02	1.69E-02
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	2.14E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	1.30E-06	1.81E-05	4.08E-05	6.17E-05
	Project Lifespan											
	Cobalt	8.62E-06	9.69E-08	9.05E-09	4.14E-09	1.02E-08	4.66E-09	0.00E+00	7.33E-06	1.13E-05	1.88E-04	2.15E-04
	Copper	1.24E-05	3.50E-07	1.26E-08	3.45E-08	1.76E-08	4.83E-08	0.00E+00	3.21E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	3.11E-06	8.74E-08	2.98E-09	1.36E-09	4.63E-09	2.12E-09	0.00E+00	2.23E-08	6.46E-06	2.41E-03	2.42E-03
	Uranium	1.54E-06	4.33E-08	5.18E-09	2.37E-08	1.36E-08	6.24E-08	0.00E+00	1.73E-06	1.81E-05	4.08E-05	6.23E-05
	Far future											
	Cobalt	8.70E-06	9.79E-08	9.04E-09	4.14E-09	1.03E-08	4.71E-09	0.00E+00	7.45E-06	1.13E-05	1.88E-04	2.16E-04
	Copper	1.26E-05	3.54E-07	1.26E-08	3.45E-08	1.78E-08	4.89E-08	0.00E+00	3.28E-04	1.80E-04	1.65E-02	1.70E-02
	Molybdenum	3.63E-06	1.02E-07	2.98E-09	1.36E-09	5.44E-09	2.49E-09	0.00E+00	2.85E-08	6.42E-06	2.41E-03	2.42E-03
	Uranium	1.51E-06	4.25E-08	5.18E-09	2.37E-08	1.38E-08	6.32E-08	0.00E+00	1.68E-06	1.81E-05	4.08E-05	6.22E-05
Seasonal Resident One-Year-Old (Lloyd Lake)	**Base Case**											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	6.89E-06	2.47E-05	4.13E-04	4.56E-04
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	2.03E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	1.23E-06	3.95E-05	9.62E-05	1.40E-04
	Project Lifespan											
	Cobalt	9.62E-06	3.43E-08	5.91E-07	7.08E-09	6.65E-07	7.97E-09	0.00E+00	6.92E-06	2.48E-05	4.14E-04	4.56E-04
	Copper	1.39E-05	1.24E-07	8.22E-07	5.91E-08	1.15E-06	8.27E-08	0.00E+00	2.29E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	3.47E-06	3.10E-08	1.95E-07	2.33E-09	3.02E-07	3.62E-09	0.00E+00	2.08E-08	1.41E-05	6.38E-03	6.40E-03
	Uranium	1.72E-06	1.53E-08	3.39E-07	4.06E-08	8.91E-07	1.07E-07	0.00E+00	1.28E-06	3.96E-05	9.63E-05	1.40E-04

Table 5-12: Estimated Non-carcinogen Doses to Human Receptors – Reasonably Foreseeable Development Case (Updated)

Human	Dose by Pathway RFD Case (mg/kg/d)										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (Internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
	Far future											
	Cobalt	9.71E-06	3.47E-08	5.91E-07	7.08E-09	6.72E-07	8.05E-09	0.00E+00	6.99E-06	2.47E-05	4.14E-04	4.56E-04
	Copper	1.40E-05	1.25E-07	8.21E-07	5.90E-08	1.16E-06	8.37E-08	0.00E+00	2.32E-04	3.93E-04	3.97E-02	4.03E-02
	Molybdenum	4.06E-06	3.62E-08	1.95E-07	2.33E-09	3.55E-07	4.26E-09	0.00E+00	2.43E-08	1.40E-05	6.38E-03	6.40E-03
	Uranium	1.69E-06	1.51E-08	3.38E-07	4.05E-08	9.02E-07	1.08E-07	0.00E+00	1.27E-06	3.95E-05	9.63E-05	1.40E-04
Permanent Resident (Patterson Lake North Arm - West Basin)	**Base Case Adult**											
	Cobalt	8.58E-06	9.65E-08	9.04E-09	4.14E-09	1.01E-08	4.64E-09	0.00E+00	2.30E-05	1.44E-05	2.44E-04	1.24E-05
	Copper	1.24E-05	3.49E-07	1.26E-08	3.45E-08	1.76E-08	4.82E-08	0.00E+00	7.61E-04	2.29E-04	1.75E-02	1.48E-06
	Molybdenum	3.04E-06	8.54E-08	2.98E-09	1.36E-09	4.54E-09	2.08E-09	0.00E+00	6.77E-08	8.18E-06	1.95E-03	0.00E+00
	Uranium	1.48E-06	4.15E-08	5.17E-09	2.37E-08	1.35E-08	6.16E-08	0.00E+00	4.11E-06	2.30E-05	4.92E-05	3.04E-06
	Base Case One-year old											
	Cobalt	9.58E-06	3.42E-08	5.91E-07	7.08E-09	6.62E-07	7.94E-09	0.00E+00	2.18E-05	2.84E-05	4.78E-04	1.38E-05
	Copper	1.38E-05	1.24E-07	8.21E-07	5.90E-08	1.15E-06	8.25E-08	0.00E+00	7.21E-04	4.52E-04	4.13E-02	1.65E-06
	Molybdenum	3.39E-06	3.03E-08	1.95E-07	2.33E-09	2.97E-07	3.56E-09	0.00E+00	6.42E-08	1.61E-05	6.06E-03	0.00E+00
	Uranium	1.65E-06	1.47E-08	3.38E-07	4.05E-08	8.79E-07	1.05E-07	0.00E+00	3.90E-06	4.54E-05	1.02E-04	3.39E-06
	Far Future Adult											
	Cobalt	2.10E-05	2.36E-07	9.05E-09	4.14E-09	2.48E-08	1.14E-08	0.00E+00	5.62E-05	1.44E-05	3.08E-04	3.21E-05
	Copper	3.21E-05	9.02E-07	1.26E-08	3.46E-08	4.54E-08	1.25E-07	0.00E+00	1.97E-03	2.30E-04	1.83E-02	1.48E-05
	Molybdenum	6.77E-05	1.90E-06	2.98E-09	1.36E-09	1.01E-07	4.64E-08	0.00E+00	1.51E-06	8.18E-06	2.00E-03	0.00E+00
	Uranium	1.48E-05	4.15E-07	7.50E-09	3.43E-08	1.35E-07	6.16E-07	0.00E+00	4.11E-05	3.34E-05	6.77E-05	6.77E-05
	Far Future One-year old											
	Cobalt	2.34E-05	8.37E-08	5.92E-07	7.09E-09	1.62E-06	1.94E-08	0.00E+00	5.33E-05	2.84E-05	5.43E-04	3.58E-05
	Copper	3.58E-05	3.20E-07	8.23E-07	5.92E-08	2.97E-06	2.13E-07	0.00E+00	1.87E-03	4.53E-04	4.20E-02	1.65E-05
	Molybdenum	7.56E-05	6.75E-07	1.95E-07	2.33E-09	6.62E-06	7.94E-08	0.00E+00	1.43E-06	1.61E-05	6.11E-03	0.00E+00
	Uranium	1.65E-05	1.47E-07	4.90E-07	5.88E-08	8.80E-06	1.05E-06	0.00E+00	3.90E-05	6.58E-05	1.16E-04	7.56E-05

COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table 5-18: Estimated Non-carcinogen Risk to Human Receptors – Project Lifespan and Far Future – Application Case and Upper Bound Scenario (Updated)

Human		Project Lifespan HQs											Far Future HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)	**Base Case**																						
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-06	1.01E-06	4.64E-06	0.00E+00	1.15E-03	7.21E-04	1.97E-02	2.25E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-07	4.12E-08	1.13E-06	0.00E+00	8.94E-04	2.69E-04	3.89E-02	4.01E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-07	1.62E-07	7.43E-07	0.00E+00	1.21E-06	1.46E-04	8.23E-02	8.25E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-04	2.24E-05	1.03E-03	0.00E+00	3.43E-03	1.92E-02	7.29E-02	9.95E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Application Case - Incremental Project Risk																						
	Cobalt	5.31E-06	5.98E-08	3.03E-09	1.39E-08	3.99E-09	1.83E-08	0.00E+00	9.83E-05	8.04E-06	3.37E-04	4.49E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	2.44E-08	6.87E-10	4.79E-10	1.31E-08	2.10E-11	5.76E-10	0.00E+00	4.22E-05	1.22E-06	1.44E-04	1.87E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	1.84E-07	5.17E-09	1.92E-09	8.78E-09	1.64E-10	7.50E-10	0.00E+00	5.75E-07	5.42E-06	8.58E-05	9.20E-05	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	2.55E-06	7.18E-08	1.91E-05	8.75E-04	8.88E-09	4.07E-07	0.00E+00	1.28E-03	2.14E-02	1.39E-02	3.75E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Upper Bound Scenario - Incremental Project Risk																						
	Cobalt	5.38E-06	6.06E-08	3.03E-09	1.39E-08	4.03E-09	1.84E-08	0.00E+00	1.02E-04	8.04E-06	3.50E-04	4.66E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	2.55E-08	7.17E-10	4.79E-10	1.31E-08	2.20E-11	6.05E-10	0.00E+00	4.34E-05	1.22E-06	1.45E-04	1.90E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	1.88E-07	5.27E-09	1.92E-09	8.78E-09	1.67E-10	7.63E-10	0.00E+00	1.76E-06	5.42E-06	1.47E-04	1.54E-04	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	1.06E-05	2.99E-07	1.91E-05	8.75E-04	3.72E-08	1.70E-06	0.00E+00	3.53E-03	2.14E-02	1.45E-02	4.03E-02	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
	Application Case - Incremental Project Risk																						
	Cobalt	7.48E-05	8.41E-07	1.31E-09	5.98E-10	7.93E-08	3.63E-08	0.00E+00	1.96E-04	1.61E-05	6.73E-04	9.61E-04	3.77E-04	4.24E-06	7.08E-10	3.24E-10	4.46E-07	2.04E-07	0.00E+00	1.01E-03	1.13E-06	2.93E-03	4.32E-03
	Copper	1.38E-06	3.88E-08	7.99E-11	2.20E-10	1.71E-09	4.71E-09	0.00E+00	8.43E-05	2.43E-06	2.87E-04	3.75E-04	1.36E-05	3.81E-07	5.34E-12	1.47E-11	1.92E-08	5.27E-08	0.00E+00	8.32E-04	9.74E-08	7.56E-04	1.60E-03
	Molybdenum	5.26E-05	1.48E-06	3.03E-10	1.39E-10	6.99E-08	3.20E-08	0.00E+00	1.15E-06	1.08E-05	1.71E-04	2.37E-04	6.70E-04	1.89E-05	0.00E+00	0.00E+00	1.00E-06	4.59E-07	0.00E+00	1.50E-05	0.00E+00	7.56E-04	1.46E-03
	Uranium	9.33E-04	2.62E-05	2.61E-06	1.20E-05	6.77E-06	3.10E-05	0.00E+00	2.57E-03	4.28E-02	2.78E-02	7.41E-02	3.06E-03	8.62E-05	2.74E-07	1.26E-06	2.79E-05	1.28E-04	0.00E+00	8.53E-03	1.22E-03	4.26E-03	1.73E-02
	Upper Bound Scenario - Incremental Project Risk																						
	Cobalt	7.78E-05	8.75E-07	1.31E-09	5.98E-10	8.26E-08	3.78E-08	0.00E+00	2.04E-04	1.61E-05	6.98E-04	9.97E-04	5.77E-04	6.50E-06	7.08E-10	3.24E-10	6.83E-07	3.12E-07	0.00E+00	1.55E-03	1.13E-06	4.49E-03	6.63E-03
	Copper	1.42E-06	3.99E-08	7.99E-11	2.20E-10	1.77E-09	4.85E-09	0.00E+00	8.68E-05	2.43E-06	2.89E-04	3.80E-04	2.04E-05	5.73E-07	5.34E-12	1.47E-11	2.89E-08	7.92E-08	0.00E+00	1.25E-03	9.74E-08	1.14E-03	2.41E-03
	Molybdenum	1.60E-04	4.50E-06	3.03E-10	1.39E-10	2.17E-07	9.93E-08	0.00E+00	3.51E-06	1.08E-05	2.93E-04	4.72E-04	2.57E-03	7.24E-05	0.00E+00	0.00E+00	3.85E-06	1.76E-06	0.00E+00	5.74E-05	0.00E+00	2.92E-03	5.63E-03
	Uranium	2.56E-03	7.21E-05	2.61E-06	1.20E-05	1.89E-05	8.67E-05	0.00E+00	7.06E-03	4.28E-02	2.89E-02	8.15E-02	3.07E-03	8.63E-05	2.74E-07	1.26E-06	2.80E-05	1.28E-04	0.00E+00	8.54E-03	1.22E-03	4.26E-03	1.73E-02
Subsistence Harvester One-year-old (Patterson Lake South Arm)	**Base Case**																						
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
	Application Case - Incremental Project Risk																						
	Cobalt	8.35E-05	2.98E-07	8.54E-08	1.02E-09	5.18E-06	6.21E-08	0.00E+00	1.86E-04	2.27E-05	6.97E-04	9.95E-04	4.21E-04	1.50E-06	4.63E-08	5.54E-10	2.91E-05	3.49E-07	0.00E+00	9.56E-04	2.22E-06	3.02E-03	4.43E-03
	Copper	1.54E-06	1.37E-08	5.22E-09	3.76E-10	1.12E-07	8.05E-09	0.00E+00	7.99E-05	4.17E-06	2.89E-04	3.74E-04	1.51E-05	1.35E-07	3.49E-10	2.51E-11	1.25E-06	9.02E-08	0.00E+00	7.89E-04	1.92E-07	7.25E-04	1.53E-03
	Molybdenum	7.16E-05	6.39E-07	2.41E-08	2.89E-10	5.56E-06	6.67E-08	0.00E+00	1.33E-06	1.82E-05	2.17E-04	3.14E-04	9.11E-04	8.13E-06	0.00E+00	0.00E+00	7.98E-05	9.56E-07	0.00E+00	1.73E-05	0.00E+00	9.41E-04	1.96E-03
	Uranium	1.04E-03	9.30E-06	1.71E-04	2.04E-05	4.42E-04	5.30E-05	0.00E+00	2.43E-03	6.44E-02	2.02E-02	8.87E-02	3.42E-03	3.05E-05	1.79E-05	2.15E-06	1.83E-03	2.19E-04	0.00E+00	8.09E-03	2.41E-03	3.14E-03	1.92E-02
	Upper Bound Scenario - Incremental Project Risk																						
	Cobalt	8.69E-05	3.10E-07	8.54E-08	1.02E-09	5.40E-06	6.47E-08	0.00E+00	1.94E-04	2.27E-05	7.24E-04	1.03E-03	6.45E-04	2.30E-06	4.63E-08	5.54E-10	4.46E-05	5.35E-07	0.00E+00	1.47E-03	2.22E-06	4.64E-03	6.80E-03
	Copper	1.58E-06	1.41E-08	5.22E-09	3.76E-10	1.15E-07	8.29E-09	0.00E+00	8.23E-05	4.17E-06	2.91E-04	3.79E-04	2.27E-05	2.03E-07	3.49E-10	2.51E-11	1.89E-06	1.36E-07	0.00E+00	1.19E-03	1.92E-07	1.09E-03	2.30E-03
	Molybdenum	2.17E-04	1.94E-06	2.41E-08	2.89E-10	1.73E-05	2.07E-07	0.00E+00	4.05E-06	1.82E-05	3.70E-04	6.29E-04	3.50E-03	3.12E-05	0.00E+00	0.00E+00	3.06E-04	3.67E-06	0.00E+00	6.63E-05	0.00E+00	3.63E-03	7.53E-03
	Uranium	2.86E-03	2.56E-05	1.71E-04	2.04E-05	1.24E-03	1.48E-04	0.00E+00	6.69E-03	6.44E-02	2.10E-02	9.66E-02	3.43E-03	3.06E-05	1.79E-05	2.15E-06	1.83E-03	2.19E-04	0.00E+00	8.10E-03	2.41E-03	3.14E-03	1.92E-02
Subsistence Harvester (Beet Lake)	**Base Case**																						
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01

Table 5-18: Estimated Non-carcinogen Risk to Human Receptors – Project Lifespan and Far Future – Application Case and Upper Bound Scenario (Updated)

Human		Project Lifespan HQs											Far Future HQs									
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Application Case - Incremental Project Risk																				
	Cobalt	3.89E-05	4.38E-07	1.31E-09	5.98E-10	4.13E-08	1.89E-08	0.00E+00	1.02E-04	1.61E-05	2.28E-04	3.86E-04	1.99E-04	2.24E-06	7.08E-10	3.24E-10	2.36E-07	1.08E-07	0.00E+00	5.34E-04	1.13E-06	1.02E-03	1.76E-03
	Copper	7.07E-07	1.99E-08	5.33E-11	1.46E-10	8.78E-10	2.41E-09	0.00E+00	4.32E-05	1.62E-06	5.49E-05	1.00E-04	7.09E-06	1.99E-07	3.56E-12	9.77E-12	1.00E-08	2.76E-08	0.00E+00	4.35E-04	6.50E-08	2.76E-04	7.18E-04
	Molybdenum	2.70E-05	7.58E-07	1.52E-10	6.94E-11	3.58E-08	1.64E-08	0.00E+00	5.89E-07	5.41E-06	2.82E-05	6.20E-05	3.49E-04	9.82E-06	0.00E+00	0.00E+00	5.22E-07	2.39E-07	0.00E+00	7.79E-06	0.00E+00	2.71E-04	6.39E-04
	Uranium	3.43E-04	9.65E-06	1.54E-06	7.05E-06	2.48E-06	1.14E-05	0.00E+00	9.44E-04	2.52E-02	1.05E-02	3.70E-02	1.14E-03	3.20E-05	1.62E-07	7.41E-07	1.04E-05	4.76E-05	0.00E+00	3.17E-03	7.20E-04	1.44E-03	6.56E-03
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	4.05E-05	4.56E-07	1.31E-09	5.98E-10	4.30E-08	1.97E-08	0.00E+00	1.06E-04	1.61E-05	2.36E-04	3.99E-04	3.06E-04	3.44E-06	7.08E-10	3.24E-10	3.61E-07	1.65E-07	0.00E+00	8.18E-04	1.13E-06	1.57E-03	2.70E-03
	Copper	7.28E-07	2.05E-08	5.33E-11	1.46E-10	9.05E-10	2.48E-09	0.00E+00	4.45E-05	1.62E-06	5.56E-05	1.02E-04	1.06E-05	3.00E-07	3.56E-12	9.77E-12	1.51E-08	4.14E-08	0.00E+00	6.54E-04	6.50E-08	4.14E-04	1.08E-03
	Molybdenum	8.25E-05	2.32E-06	1.52E-10	6.94E-11	1.11E-07	5.10E-08	0.00E+00	1.81E-06	5.41E-06	6.50E-05	1.57E-04	1.34E-03	3.77E-05	0.00E+00	0.00E+00	2.01E-06	9.18E-07	0.00E+00	2.99E-05	0.00E+00	1.04E-03	2.45E-03
	Uranium	9.43E-04	2.65E-05	1.54E-06	7.05E-06	6.95E-06	3.18E-05	0.00E+00	2.59E-03	2.52E-02	1.08E-02	3.96E-02	1.14E-03	3.21E-05	1.62E-07	7.41E-07	1.04E-05	4.76E-05	0.00E+00	3.18E-03	7.20E-04	1.44E-03	6.56E-03
Subsistence Harvester One-year-old (Beet Lake)		Base Case																				
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Incremental Project Risk																				
	Cobalt	4.34E-05	1.55E-07	8.54E-08	1.02E-09	2.70E-06	3.23E-08	0.00E+00	9.69E-05	2.27E-05	2.32E-04	3.98E-04	2.23E-04	7.95E-07	4.63E-08	5.54E-10	1.54E-05	1.85E-07	0.00E+00	5.06E-04	2.22E-06	1.04E-03	1.79E-03
	Copper	7.89E-07	7.05E-09	3.48E-09	2.50E-10	5.74E-08	4.13E-09	0.00E+00	4.10E-05	2.78E-06	5.16E-05	9.62E-05	7.91E-06	7.06E-08	2.33E-10	1.67E-11	6.56E-07	4.72E-08	0.00E+00	4.12E-04	1.28E-07	2.54E-04	6.76E-04
	Molybdenum	3.67E-05	3.27E-07	1.21E-08	1.45E-10	2.85E-06	3.42E-08	0.00E+00	6.80E-07	9.10E-06	3.46E-05	8.43E-05	4.74E-04	4.24E-06	0.00E+00	0.00E+00	4.16E-05	4.98E-07	0.00E+00	8.99E-06	0.00E+00	3.32E-04	8.62E-04
	Uranium	3.83E-04	3.42E-06	1.01E-04	1.21E-05	1.62E-04	1.94E-05	0.00E+00	8.95E-04	3.80E-02	7.40E-03	4.69E-02	1.27E-03	1.14E-05	1.06E-05	1.27E-06	6.79E-04	8.13E-05	0.00E+00	3.01E-03	1.42E-03	1.04E-03	7.53E-03
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	4.52E-05	1.61E-07	8.54E-08	1.02E-09	2.81E-06	3.37E-08	0.00E+00	1.01E-04	2.27E-05	2.40E-04	4.12E-04	3.41E-04	1.22E-06	4.63E-08	5.54E-10	2.36E-05	2.83E-07	0.00E+00	7.75E-04	2.22E-06	1.59E-03	2.74E-03
	Copper	8.13E-07	7.25E-09	3.48E-09	2.50E-10	5.91E-08	4.25E-09	0.00E+00	4.22E-05	2.78E-06	5.23E-05	9.81E-05	1.19E-05	1.06E-07	2.33E-10	1.67E-11	9.86E-07	7.09E-08	0.00E+00	6.20E-04	1.28E-07	3.82E-04	1.01E-03
	Molybdenum	1.12E-04	1.00E-06	1.21E-08	1.45E-10	8.86E-06	1.06E-07	0.00E+00	2.09E-06	9.10E-06	7.97E-05	2.13E-04	1.82E-03	1.63E-05	0.00E+00	0.00E+00	1.60E-04	1.91E-06	0.00E+00	3.45E-05	0.00E+00	1.28E-03	3.31E-03
	Uranium	1.05E-03	9.40E-06	1.01E-04	1.21E-05	4.54E-04	5.44E-05	0.00E+00	2.46E-03	3.80E-02	7.65E-03	4.98E-02	1.27E-03	1.14E-05	1.06E-05	1.27E-06	6.79E-04	8.14E-05	0.00E+00	3.01E-03	1.42E-03	1.04E-03	7.53E-03
Subsistence Harvester (Lloyd Lake)		Base Case																				
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Incremental Project Risk																				
	Cobalt	4.05E-06	4.55E-08	1.31E-09	5.98E-10	4.26E-09	1.95E-09	0.00E+00	1.06E-05	1.61E-05	5.65E-05	8.73E-05	2.04E-05	2.30E-07	7.08E-10	3.24E-10	2.42E-08	1.11E-08	0.00E+00	5.47E-05	1.13E-06	1.10E-04	1.87E-04
	Copper	7.33E-08	2.06E-09	2.66E-11	7.32E-11	9.02E-11	2.48E-10	0.00E+00	4.48E-06	8.11E-07	1.73E-05	2.27E-05	7.23E-07	2.03E-08	1.78E-12	4.88E-12	1.02E-09	2.81E-09	0.00E+00	4.44E-05	3.25E-08	2.84E-05	7.36E-05
	Molybdenum	2.79E-06	7.84E-08	1.52E-10	6.94E-11	3.67E-09	1.68E-09	0.00E+00	6.08E-08	5.41E-06	1.22E-05	2.06E-05	3.56E-05	1.00E-06	0.00E+00	0.00E+00	5.33E-08	2.44E-08	0.00E+00	7.94E-07	0.00E+00	2.77E-05	6.51E-05
	Uranium	3.13E-05	8.81E-07	5.85E-08	2.68E-07	2.25E-07	1.03E-06	0.00E+00	8.61E-05	9.58E-04	4.07E-04	1.48E-03	1.03E-04	2.90E-06	6.15E-09	2.81E-08	9.41E-07	4.31E-06	0.00E+00	2.87E-04	2.74E-05	9.62E-05	5.22E-04
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	4.21E-06	4.74E-08	1.31E-09	5.98E-10	4.44E-09	2.03E-09	0.00E+00	1.10E-05	1.61E-05	5.73E-05	8.87E-05	3.13E-05	3.52E-07	7.08E-10	3.24E-10	3.70E-08	1.69E-08	0.00E+00	8.38E-05	1.13E-06	1.66E-04	2.82E-04
	Copper	7.54E-08	2.12E-09	2.66E-11	7.32E-11	9.29E-11	2.55E-10	0.00E+00	4.61E-06	8.11E-07	1.74E-05	2.29E-05	1.09E-06	3.06E-08	1.78E-12	4.88E-12	1.54E-09	4.23E-09	0.00E+00	6.67E-05	3.25E-08	4.25E-05	1.10E-04
	Molybdenum	8.51E-06	2.39E-07	1.52E-10	6.94E-11	1.14E-08	5.23E-09	0.00E+00	1.86E-07	5.41E-06	1.60E-05	3.03E-05	1.37E-04	3.84E-06	0.00E+00	0.00E+00	2.05E-07	9.36E-08	0.00E+00	3.05E-06	0.00E+00	1.06E-04	2.50E-04
	Uranium	8.67E-05	2.44E-06	5.85E-08	2.68E-07	6.31E-07	2.89E-06	0.00E+00	2.38E-04	9.58E-04	4.37E-04	1.73E-03	1.03E-04	2.90E-06	6.15E-09	2.81E-08	9.41E-07	4.31E-06	0.00E+00	2.88E-04	2.74E-05	9.62E-05	5.22E-04
Subsistence Harvester One-year-old (Lloyd Lake)		Base Case																				
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Incremental Project Risk																				
	Cobalt	4.52E-06	1.61E-08	8.54E-08	1.02E-09	2.78E-07	3.33E-09	0.00E+00	1.01E-05	2.27E-05	5.72E-05	9.49E-05	2.28E-05	8.15E-08	4.63E-08	5.54E-10	1.58E-06	1.89E-08	0.00E+00	5.19E-05	2.22E-06	1.12E-04	1.91E-04
	Copper	8.18E-08	7.30E-10	1.74E-09	1.25E-10	5.89E-09	4.24E-10	0.00E+00	4.25E-06	1.39E-06	1.63E-05	2.21E-05	8.08E-07	7.21E-09	1.16E-10	8.36E-12	6.70E-08	4.81E-09	0.00E+00	4.21E-05	6.40E-08	2.62E-05	6.93E-05
	Molybdenum	3.79E-06	3.38E-08	1.21E-08	1.45E-10	2.92E-07	3.50E-09	0.00E+00	7.01E-08	9.10E-06	1.50E-05	2.83E-05	4.84E-05	4.32E-07	0.00E+00	0.00E+00	4.24E-06	5.08E-08	0.00E+00	9.16E-07	0.00E+00	3.39E-05	8.79E-05
	Uranium	3.50E-05	3.12E-07	3.82E-06	4.58E-07	1.47E-05	1.77E-06	0.00E+00	8.16E-05	1.44E-03	2.89E-04	1.87E-03	1.15E-04	1.03E-06	4.02E-07	4.81E-08	6.15E-05	7.37E-06	0.00E+00	2.72E-04	5.39E-05	7.05E-05	5.82E-04

Table 5-18: Estimated Non-carcinogen Risk to Human Receptors – Project Lifespan and Far Future – Application Case and Upper Bound Scenario (Updated)

Human		Project Lifespan HQs											Far Future HQs									
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	4.70E-06	1.68E-08	8.54E-08	1.02E-09	2.90E-07	3.47E-09	0.00E+00	1.05E-05	2.27E-05	5.80E-05	9.63E-05	3.50E-05	1.25E-07	4.63E-08	5.54E-10	2.42E-06	2.90E-08	0.00E+00	7.94E-05	2.22E-06	1.68E-04	2.88E-04
	Copper	8.42E-08	7.52E-10	1.74E-09	1.25E-10	6.07E-09	4.36E-10	0.00E+00	4.37E-06	1.39E-06	1.64E-05	2.23E-05	1.21E-06	1.08E-08	1.16E-10	8.36E-12	1.01E-07	7.24E-09	0.00E+00	6.33E-05	6.40E-08	3.92E-05	1.04E-04
	Molybdenum	1.16E-05	1.03E-07	1.21E-08	1.45E-10	9.09E-07	1.09E-08	0.00E+00	2.15E-07	9.10E-06	1.96E-05	4.15E-05	1.86E-04	1.66E-06	0.00E+00	0.00E+00	1.63E-05	1.95E-07	0.00E+00	3.52E-06	0.00E+00	1.30E-04	3.37E-04
	Uranium	9.68E-05	8.64E-07	3.82E-06	4.58E-07	4.12E-05	4.94E-06	0.00E+00	2.26E-04	1.44E-03	3.11E-04	2.13E-03	1.15E-04	1.03E-06	4.02E-07	4.81E-08	6.15E-05	7.37E-06	0.00E+00	2.73E-04	5.39E-05	7.05E-05	5.83E-04
Seasonal Resident (Patterson Lake South Arm)		Base Case																				
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Incremental Project Risk																				
	Cobalt	4.49E-05	5.05E-07	7.84E-10	3.59E-10	4.76E-08	2.18E-08	0.00E+00	3.74E-05	4.53E-06	1.60E-04	2.47E-04	2.26E-04	2.54E-06	4.25E-10	1.94E-10	2.67E-07	1.22E-07	0.00E+00	1.92E-04	5.31E-07	7.01E-04	1.12E-03
	Copper	8.27E-07	2.33E-08	4.80E-11	1.32E-10	1.03E-09	2.82E-09	0.00E+00	1.60E-05	9.32E-07	6.70E-05	8.48E-05	8.13E-06	2.29E-07	3.20E-12	8.80E-12	1.15E-08	3.16E-08	0.00E+00	1.58E-04	4.58E-08	1.87E-04	3.53E-04
	Molybdenum	3.16E-05	8.88E-07	1.82E-10	8.33E-11	4.20E-08	1.92E-08	0.00E+00	2.19E-07	2.94E-06	4.01E-05	7.57E-05	4.02E-04	1.13E-05	0.00E+00	0.00E+00	6.02E-07	2.76E-07	0.00E+00	2.84E-06	0.00E+00	1.80E-04	5.97E-04
	Uranium	5.60E-04	1.57E-05	1.57E-06	7.17E-06	4.06E-06	1.86E-05	0.00E+00	4.88E-04	1.34E-02	5.17E-03	1.97E-02	1.84E-03	5.17E-05	1.65E-07	7.54E-07	1.68E-05	7.68E-05	0.00E+00	1.62E-03	5.75E-04	1.02E-03	5.20E-03
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	4.67E-05	5.25E-07	7.84E-10	3.59E-10	4.96E-08	2.27E-08	0.00E+00	3.89E-05	4.53E-06	1.66E-04	2.57E-04	3.46E-04	3.90E-06	4.25E-10	1.94E-10	4.10E-07	1.87E-07	0.00E+00	2.94E-04	5.31E-07	1.08E-03	1.72E-03
	Copper	8.51E-07	2.39E-08	4.80E-11	1.32E-10	1.06E-09	2.91E-09	0.00E+00	1.65E-05	9.32E-07	6.76E-05	8.59E-05	1.22E-05	3.44E-07	3.20E-12	8.80E-12	1.73E-08	4.75E-08	0.00E+00	2.38E-04	4.58E-08	2.80E-04	5.31E-04
	Molybdenum	9.59E-05	2.70E-06	1.82E-10	8.33E-11	1.30E-07	5.96E-08	0.00E+00	6.67E-07	2.94E-06	6.90E-05	1.71E-04	1.54E-03	4.34E-05	0.00E+00	0.00E+00	2.31E-06	1.06E-06	0.00E+00	1.09E-05	0.00E+00	6.94E-04	2.30E-03
	Uranium	1.54E-03	4.33E-05	1.57E-06	7.17E-06	1.14E-05	5.20E-05	0.00E+00	1.34E-03	1.34E-02	5.49E-03	2.19E-02	1.84E-03	5.18E-05	1.65E-07	7.54E-07	1.68E-05	7.68E-05	0.00E+00	1.62E-03	5.75E-04	1.02E-03	5.21E-03
Seasonal Resident One-year-old (Patterson Lake South Arm)		Base Case																				
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Incremental Project Risk																				
	Cobalt	5.01E-05	1.79E-07	5.12E-08	6.14E-10	3.11E-06	3.73E-08	0.00E+00	3.54E-05	7.54E-06	1.66E-04	2.62E-04	2.52E-04	9.02E-07	2.78E-08	3.33E-10	1.75E-05	2.09E-07	0.00E+00	1.82E-04	1.16E-06	7.23E-04	1.18E-03
	Copper	9.24E-07	8.25E-09	3.13E-09	2.25E-10	6.72E-08	4.83E-09	0.00E+00	1.52E-05	1.87E-06	6.82E-05	8.63E-05	9.08E-06	8.11E-08	2.09E-10	1.50E-11	7.53E-07	5.41E-08	0.00E+00	1.50E-04	1.00E-07	1.77E-04	3.37E-04
	Molybdenum	4.29E-05	3.83E-07	1.45E-08	1.74E-10	3.34E-06	4.00E-08	0.00E+00	2.52E-07	5.75E-06	5.12E-05	1.04E-04	5.47E-04	4.88E-06	0.00E+00	0.00E+00	4.79E-05	5.74E-07	0.00E+00	3.28E-06	0.00E+00	2.24E-04	8.28E-04
	Uranium	6.25E-04	5.58E-06	1.02E-04	1.23E-05	2.65E-04	3.18E-05	0.00E+00	4.62E-04	2.40E-02	3.81E-03	2.93E-02	2.05E-03	1.83E-05	1.08E-05	1.29E-06	1.10E-03	1.31E-04	0.00E+00	1.54E-03	1.26E-03	7.49E-04	6.85E-03
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	5.21E-05	1.86E-07	5.12E-08	6.14E-10	3.24E-06	3.88E-08	0.00E+00	3.68E-05	7.54E-06	1.72E-04	2.72E-04	3.87E-04	1.38E-06	2.78E-08	3.33E-10	2.68E-05	3.21E-07	0.00E+00	2.79E-04	1.16E-06	1.11E-03	1.81E-03
	Copper	9.51E-07	8.49E-09	3.13E-09	2.25E-10	6.92E-08	4.98E-09	0.00E+00	1.56E-05	1.87E-06	6.87E-05	8.73E-05	1.36E-05	1.22E-07	2.09E-10	1.50E-11	1.13E-06	8.13E-08	0.00E+00	2.25E-04	1.00E-07	2.66E-04	5.06E-04
	Molybdenum	1.30E-04	1.16E-06	1.45E-08	1.74E-10	1.04E-05	1.24E-07	0.00E+00	7.70E-07	5.75E-06	8.76E-05	2.36E-04	2.10E-03	1.87E-05	0.00E+00	0.00E+00	1.84E-04	2.20E-06	0.00E+00	1.26E-05	0.00E+00	8.65E-04	3.18E-03
	Uranium	1.72E-03	1.53E-05	1.02E-04	1.23E-05	7.43E-04	8.90E-05	0.00E+00	1.27E-03	2.40E-02	4.05E-03	3.20E-02	2.06E-03	1.83E-05	1.08E-05	1.29E-06	1.10E-03	1.31E-04	0.00E+00	1.54E-03	1.26E-03	7.49E-04	6.86E-03
Seasonal Resident (Lloyd Lake)		Base Case																				
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Incremental Project Risk																				
	Cobalt	2.43E-06	2.73E-08	7.84E-10	3.59E-10	2.55E-09	1.17E-09	0.00E+00	3.62E-06	4.53E-06	1.30E-05	2.36E-05	1.23E-05	1.38E-07	4.25E-10	1.94E-10	1.45E-08	6.63E-09	0.00E+00	1.76E-05	5.31E-07	2.67E-05	5.72E-05
	Copper	4.40E-08	1.24E-09	1.60E-11	4.39E-11	5.41E-11	1.49E-10	0.00E+00	1.87E-04	3.11E-07	3.94E-06	1.91E-04	4.34E-07	1.22E-08	1.07E-12	2.93E-12	6.15E-10	1.69E-09	0.00E+00	2.04E-04	1.53E-08	7.19E-06	2.12E-04
	Molybdenum	1.67E-06	4.70E-08	9.10E-11	4.17E-11	2.20E-09	1.01E-09	0.00E+00	1.97E-08	1.47E-06	2.81E-06	6.02E-06	2.14E-05	6.01E-07	0.00E+00	0.00E+00	3.20E-08	1.46E-08	0.00E+00	2.52E-07	0.00E+00	6.65E-06	2.89E-05
	Uranium	1.88E-05	5.29E-07	3.51E-08	1.61E-07	1.35E-07	6.19E-07	0.00E+00	5.58E-04	3.00E-04	7.14E-05	9.49E-04	6.19E-05	1.74E-06	3.69E-09	1.69E-08	5.64E-07	2.58E-06	0.00E+00	6.37E-04	1.29E-05	2.51E-05	7.41E-04
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	2.53E-06	2.84E-08	7.84E-10	3.59E-10	2.66E-09	1.22E-09	0.00E+00	3.76E-06	4.53E-06	1.32E-05	2.40E-05	1.88E-05	2.11E-07	4.25E-10	1.94E-10	2.22E-08	1.02E-08	0.00E+00	2.68E-05	5.31E-07	4.01E-05	8.65E-05
	Copper	4.53E-08	1.27E-09	1.60E-11	4.39E-11	5.57E-11	1.53E-10	0.00E+00	1.87E-04	3.11E-07	3.96E-06	1.92E-04	6.52E-07	1.83E-08	1.07E-12	2.93E-12	9.24E-10	2.54E-09	0.00E+00	2.13E-04	1.53E-08	1.08E-05	2.25E-04
	Molybdenum	5.11E-06	1.44E-07	9.10E-11	4.17E-11	6.85E-09	3.14E-09	0.00E+00	5.98E-08	1.47E-06	3.70E-06	1.05E-05	8.20E-05	2.31E-06	0.00E+00	0.00E+00	1.23E-07	5.62E-08	0.00E+00	9.66E-07	0.00E+00	2.55E-05	1.11E-04
	Uranium	5.20E-05	1.46E-06	3.51E-08	1.61E-07	3.79E-07	1.73E-06	0.00E+00	6.18E-04	3.00E-04	8.02E-05	1.05E-03	6.19E-05	1.74E-06	3.69E-09	1.69E-08	5.65E-07	2.59E-06	0.00E+00	6.37E-04	1.29E-05	2.51E-05	7.41E-04

Table 5-18: Estimated Non-carcinogen Risk to Human Receptors – Project Lifespan and Far Future – Application Case and Upper Bound Scenario (Updated)

Human		Project Lifespan HQs											Far Future HQs									
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-year-old (Lloyd Lake)		**Base Case**																				
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Incremental Project Risk																				
	Cobalt	2.71E-06	9.68E-09	5.12E-08	6.14E-10	1.67E-07	2.00E-09	0.00E+00	1.91E-06	7.54E-06	1.33E-05	2.57E-05	1.37E-05	4.89E-08	2.78E-08	3.33E-10	9.47E-07	1.13E-08	0.00E+00	9.86E-06	1.16E-06	2.70E-05	5.27E-05
	Copper	4.91E-08	4.38E-10	1.04E-09	7.51E-11	3.54E-09	2.54E-10	0.00E+00	8.07E-07	6.24E-07	3.81E-06	5.29E-06	4.85E-07	4.33E-09	6.98E-11	5.02E-12	4.02E-08	2.89E-09	0.00E+00	8.00E-06	3.34E-08	6.53E-06	1.51E-05
	Molybdenum	2.27E-06	2.03E-08	7.24E-09	8.68E-11	1.75E-07	2.10E-09	0.00E+00	1.33E-08	2.88E-06	3.52E-06	8.88E-06	2.90E-05	2.59E-07	0.00E+00	0.00E+00	2.54E-06	3.05E-08	0.00E+00	1.74E-07	0.00E+00	8.14E-06	4.02E-05
	Uranium	2.10E-05	1.87E-07	2.29E-06	2.75E-07	8.84E-06	1.06E-06	0.00E+00	1.55E-05	5.37E-04	4.99E-05	6.36E-04	6.91E-05	6.17E-07	2.41E-07	2.89E-08	3.69E-05	4.42E-06	0.00E+00	5.18E-05	2.81E-05	1.80E-05	2.09E-04
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	2.82E-06	1.01E-08	5.12E-08	6.14E-10	1.74E-07	2.08E-09	0.00E+00	1.99E-06	7.54E-06	1.35E-05	2.61E-05	2.10E-05	7.49E-08	2.78E-08	3.33E-10	1.45E-06	1.74E-08	0.00E+00	1.51E-05	1.16E-06	4.06E-05	7.94E-05
	Copper	5.05E-08	4.51E-10	1.04E-09	7.51E-11	3.64E-09	2.62E-10	0.00E+00	8.31E-07	6.24E-07	3.83E-06	5.34E-06	7.28E-07	6.50E-09	6.98E-11	5.02E-12	6.04E-08	4.34E-09	0.00E+00	1.20E-05	3.34E-08	9.78E-06	2.26E-05
	Molybdenum	6.94E-06	6.20E-08	7.24E-09	8.68E-11	5.45E-07	6.53E-09	0.00E+00	4.09E-08	2.88E-06	4.62E-06	1.51E-05	1.11E-04	9.95E-07	0.00E+00	0.00E+00	9.76E-06	1.17E-07	0.00E+00	6.69E-07	0.00E+00	3.12E-05	1.54E-04
	Uranium	5.81E-05	5.18E-07	2.29E-06	2.75E-07	2.47E-05	2.97E-06	0.00E+00	4.30E-05	5.37E-04	5.63E-05	7.25E-04	6.92E-05	6.17E-07	2.41E-07	2.89E-08	3.69E-05	4.42E-06	0.00E+00	5.18E-05	2.81E-05	1.80E-05	2.09E-04
Permanent Resident (Patterson Lake North Arm - West Basin)		**Base Case**																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Incremental Project Risk																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.24E-03	1.40E-05	2.83E-09	1.30E-09	1.47E-06	6.72E-07	0.00E+00	3.32E-03	4.51E-06	6.37E-03	1.10E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.62E-05	1.30E-06	6.05E-11	1.66E-10	6.54E-08	1.80E-07	0.00E+00	2.84E-03	1.10E-06	1.81E-03	4.69E-03
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.31E-03	6.50E-05	0.00E+00	0.00E+00	3.46E-06	1.58E-06	0.00E+00	5.15E-05	0.00E+00	1.80E-03	4.23E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.21E-02	6.23E-04	3.84E-06	1.76E-05	2.02E-04	9.25E-04	0.00E+00	6.17E-02	1.71E-02	3.07E-02	1.33E-01
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.90E-03	2.14E-05	2.83E-09	1.30E-09	2.25E-06	1.03E-06	0.00E+00	5.09E-03	4.51E-06	9.75E-03	1.68E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6.94E-05	1.95E-06	6.05E-11	1.66E-10	9.83E-08	2.70E-07	0.00E+00	4.26E-03	1.10E-06	2.71E-03	7.04E-03
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8.87E-03	2.49E-04	0.00E+00	0.00E+00	1.33E-05	6.08E-06	0.00E+00	1.98E-04	0.00E+00	6.90E-03	1.62E-02
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.22E-02	6.24E-04	3.84E-06	1.76E-05	2.02E-04	9.26E-04	0.00E+00	6.17E-02	1.71E-02	3.07E-02	1.34E-01
Permanent Resident One-year-old (Patterson Lake North Arm - West Basin)		**Base Case**																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Incremental Project Risk																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.39E-03	4.95E-06	1.85E-07	2.22E-09	9.59E-05	1.15E-06	0.00E+00	3.15E-03	8.90E-06	6.47E-03	1.11E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.16E-05	4.60E-07	3.95E-09	2.84E-10	4.28E-06	3.07E-07	0.00E+00	2.69E-03	2.18E-06	1.67E-03	4.41E-03
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.14E-03	2.80E-05	0.00E+00	0.00E+00	2.75E-04	3.30E-06	0.00E+00	5.95E-05	0.00E+00	2.20E-03	5.70E-03
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.47E-02	2.21E-04	2.51E-04	3.01E-05	1.32E-02	1.58E-03	0.00E+00	5.85E-02	3.37E-02	2.23E-02	1.55E-01
		Upper Bound Scenario - Incremental Project Risk																				
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.12E-03	7.59E-06	1.85E-07	2.22E-09	1.47E-04	1.76E-06	0.00E+00	4.83E-03	8.90E-06	9.90E-03	1.70E-02
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7.75E-05	6.92E-07	3.95E-09	2.84E-10	6.42E-06	4.62E-07	0.00E+00	4.04E-03	2.18E-06	2.50E-03	6.62E-03
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1.21E-02	1.08E-04	0.00E+00	0.00E+00	1.06E-03	1.27E-05	0.00E+00	2.28E-04	0.00E+00	8.44E-03	2.19E-02
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.48E-02	2.21E-04	2.51E-04	3.01E-05	1.32E-02	1.58E-03	0.00E+00	5.85E-02	3.37E-02	2.23E-02	1.55E-01

Note: Underlined values indicate exceedance of the HQ of 0.2 for a given exposure pathway; **Bolded values** indicate exceedance of the HQ of 1 for all exposure pathways.
HQ = hazard quotient; COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table 5-24: Estimated Non-carcinogen Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

		RFD Case HQs										
Human	**COPC**	**Water (internal)**	**Water (External)**	**Soil (Internal)**	**Soil (External)**	**Sediment (internal)**	**Sediment (External)**	**Aquatic Plants**	**Aquatic Animals**	**Terrestrial Plants**	**Terrestrial Animals**	**Total by COPC**
Camp Worker (Patterson Lake North Arm - West Basin)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-06	1.01E-06	4.64E-06	0.00E+00	1.15E-03	7.21E-04	1.97E-02	2.25E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-07	4.12E-08	1.13E-06	0.00E+00	8.94E-04	2.69E-04	3.89E-02	4.01E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-07	1.62E-07	7.43E-07	0.00E+00	1.21E-06	1.46E-04	8.23E-02	8.25E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-04	2.24E-05	1.03E-03	0.00E+00	3.43E-03	1.92E-02	7.29E-02	9.95E-02
		Project Lifespan - Incremental Project Risk										
	Cobalt	5.31E-06	5.98E-08	1.72E-09	7.89E-09	3.99E-09	1.83E-08	0.00E+00	1.79E-04	8.04E-06	3.32E-04	5.25E-04
	Copper	2.44E-08	6.87E-10	4.67E-10	1.28E-08	2.10E-11	5.76E-10	0.00E+00	8.64E-05	4.06E-07	1.47E-04	2.34E-04
	Molybdenum	1.84E-07	5.17E-09	1.91E-09	8.75E-09	1.64E-10	7.50E-10	0.00E+00	9.84E-07	2.71E-06	8.76E-05	9.15E-05
	Uranium	2.55E-06	7.18E-08	1.94E-05	8.88E-04	8.88E-09	4.07E-07	0.00E+00	7.17E-03	2.42E-02	1.52E-02	4.75E-02
		Far Future - Incremental Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester (Patterson Lake South Arm)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	1.46E-04	1.64E-06	1.31E-09	5.98E-10	1.10E-07	5.04E-08	0.00E+00	3.59E-04	1.61E-05	6.63E-04	1.19E-03
	Copper	2.86E-06	8.04E-08	2.66E-11	7.32E-11	2.49E-09	6.84E-09	0.00E+00	1.73E-04	8.11E-07	2.93E-04	4.70E-04
	Molybdenum	9.60E-05	2.70E-06	1.52E-10	6.94E-11	9.18E-08	4.20E-08	0.00E+00	1.97E-06	5.41E-06	1.75E-04	2.81E-04
	Uranium	5.35E-03	1.50E-04	2.95E-06	1.35E-05	1.47E-05	6.73E-05	0.00E+00	1.43E-02	4.83E-02	3.04E-02	9.87E-02
		Far Future - Incremental Project Risk										
	Cobalt	3.77E-04	4.24E-06	7.08E-10	3.24E-10	4.46E-07	2.04E-07	0.00E+00	1.01E-03	1.13E-06	2.92E-03	4.31E-03
	Copper	1.36E-05	3.81E-07	1.78E-12	4.88E-12	1.92E-08	5.27E-08	0.00E+00	8.32E-04	3.25E-08	7.56E-04	1.60E-03
	Molybdenum	6.70E-04	1.89E-05	0.00E+00	0.00E+00	1.00E-06	4.59E-07	0.00E+00	1.50E-05	0.00E+00	7.56E-04	1.46E-03
	Uranium	3.06E-03	8.62E-05	3.10E-07	1.42E-06	2.79E-05	1.28E-04	0.00E+00	8.53E-03	1.38E-03	4.39E-03	1.76E-02
Subsistence Harvester One-year-old (Patterson Lake South Arm)		**Base Case**										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	1.63E-04	5.82E-07	8.54E-08	1.02E-09	7.19E-06	8.62E-08	0.00E+00	3.40E-04	2.27E-05	6.80E-04	1.21E-03
	Copper	3.19E-06	2.85E-08	1.74E-09	1.25E-10	1.63E-07	1.17E-08	0.00E+00	1.64E-04	1.39E-06	2.95E-04	4.64E-04
	Molybdenum	1.30E-04	1.16E-06	1.21E-08	1.45E-10	7.30E-06	8.75E-08	0.00E+00	2.27E-06	9.10E-06	2.21E-04	3.72E-04
	Uranium	5.97E-03	5.33E-05	1.93E-04	2.31E-05	9.61E-04	1.15E-04	0.00E+00	1.36E-02	7.27E-02	2.20E-02	1.16E-01
		Far Future - Incremental Project Risk										
	Cobalt	4.21E-04	1.50E-06	4.63E-08	5.54E-10	2.91E-05	3.49E-07	0.00E+00	9.56E-04	2.22E-06	3.01E-03	4.43E-03
	Copper	1.51E-05	1.35E-07	1.16E-10	8.36E-12	1.25E-06	9.02E-08	0.00E+00	7.89E-04	6.40E-08	7.25E-04	1.53E-03
	Molybdenum	9.11E-04	8.13E-06	0.00E+00	0.00E+00	7.98E-05	9.56E-07	0.00E+00	1.73E-05	0.00E+00	9.41E-04	1.96E-03
	Uranium	3.42E-03	3.05E-05	2.03E-05	2.43E-06	1.83E-03	2.19E-04	0.00E+00	8.09E-03	2.72E-03	3.23E-03	1.96E-02
Subsistence Harvester (Beet Lake)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01

Table 5-24: Estimated Non-carcinogen Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

		RFD Case HQs										
Human	**COPC**	**Water (internal)**	**Water (External)**	**Soil (Internal)**	**Soil (External)**	**Sediment (internal)**	**Sediment (External)**	**Aquatic Plants**	**Aquatic Animals**	**Terrestrial Plants**	**Terrestrial Animals**	**Total by COPC**
		Project Lifespan - Incremental Project Risk										
	Cobalt	6.47E-05	7.27E-07	1.31E-09	5.98E-10	5.83E-08	2.67E-08	0.00E+00	1.59E-04	1.61E-05	3.21E-04	5.62E-04
	Copper	1.24E-06	3.49E-08	2.66E-11	7.32E-11	1.30E-09	3.57E-09	0.00E+00	7.51E-05	8.11E-07	5.12E-05	1.28E-04
	Molybdenum	4.28E-05	1.20E-06	1.52E-10	6.94E-11	4.78E-08	2.19E-08	0.00E+00	8.77E-07	5.41E-06	3.50E-05	8.54E-05
	Uranium	1.86E-03	5.23E-05	1.65E-06	7.54E-06	5.43E-06	2.49E-05	0.00E+00	4.97E-03	2.70E-02	1.14E-02	4.53E-02
		Far Future - Incremental Project Risk										
	Cobalt	1.99E-04	2.24E-06	7.08E-10	3.24E-10	2.36E-07	1.08E-07	0.00E+00	5.34E-04	1.13E-06	1.02E-03	1.76E-03
	Copper	7.09E-06	1.99E-07	1.78E-12	4.88E-12	1.00E-08	2.76E-08	0.00E+00	4.35E-04	3.25E-08	2.75E-04	7.18E-04
	Molybdenum	3.49E-04	9.82E-06	0.00E+00	0.00E+00	5.22E-07	2.39E-07	0.00E+00	7.79E-06	0.00E+00	2.71E-04	6.39E-04
	Uranium	1.14E-03	3.20E-05	1.73E-07	7.93E-07	1.04E-05	4.76E-05	0.00E+00	3.17E-03	7.71E-04	1.48E-03	6.66E-03
Subsistence Harvester One-year-old (Beet Lake)		**Base Case**										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	7.22E-05	2.58E-07	8.54E-08	1.02E-09	3.81E-06	4.57E-08	0.00E+00	1.51E-04	2.27E-05	3.31E-04	5.81E-04
	Copper	1.39E-06	1.24E-08	1.74E-09	1.25E-10	8.50E-08	6.11E-09	0.00E+00	7.12E-05	1.39E-06	4.76E-05	1.22E-04
	Molybdenum	5.82E-05	5.19E-07	1.21E-08	1.45E-10	3.80E-06	4.56E-08	0.00E+00	1.01E-06	9.10E-06	4.30E-05	1.16E-04
	Uranium	2.07E-03	1.85E-05	1.08E-04	1.29E-05	3.55E-04	4.25E-05	0.00E+00	4.71E-03	4.06E-02	8.06E-03	5.60E-02
		Far Future - Incremental Project Risk										
	Cobalt	2.23E-04	7.95E-07	4.63E-08	5.54E-10	1.54E-05	1.85E-07	0.00E+00	5.06E-04	2.22E-06	1.04E-03	1.79E-03
	Copper	7.91E-06	7.06E-08	1.16E-10	8.36E-12	6.56E-07	4.72E-08	0.00E+00	4.12E-04	6.40E-08	2.54E-04	6.75E-04
	Molybdenum	4.74E-04	4.24E-06	0.00E+00	0.00E+00	4.16E-05	4.98E-07	0.00E+00	8.99E-06	0.00E+00	3.32E-04	8.62E-04
	Uranium	1.27E-03	1.14E-05	1.13E-05	1.36E-06	6.79E-04	8.13E-05	0.00E+00	3.01E-03	1.52E-03	1.08E-03	7.66E-03
Subsistence Harvester (Lloyd Lake)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	6.56E-06	7.38E-08	1.31E-09	5.98E-10	6.04E-09	2.76E-09	0.00E+00	1.63E-05	1.61E-05	6.36E-05	1.03E-04
	Copper	1.25E-07	3.52E-09	2.66E-11	7.32E-11	1.34E-10	3.68E-10	0.00E+00	7.57E-06	8.11E-07	1.85E-05	2.70E-05
	Molybdenum	4.30E-06	1.21E-07	1.52E-10	6.94E-11	4.92E-09	2.25E-09	0.00E+00	8.86E-08	5.41E-06	1.29E-05	2.29E-05
	Uranium	1.73E-04	4.86E-06	1.95E-08	8.92E-08	4.97E-07	2.28E-06	0.00E+00	4.62E-04	3.19E-04	1.66E-04	1.13E-03
		Far Future - Incremental Project Risk										
	Cobalt	2.04E-05	2.30E-07	7.08E-10	3.24E-10	2.42E-08	1.11E-08	0.00E+00	5.47E-05	1.13E-06	1.10E-04	1.87E-04
	Copper	7.23E-07	2.03E-08	1.78E-12	4.88E-12	1.02E-09	2.81E-09	0.00E+00	4.44E-05	3.25E-08	2.84E-05	7.36E-05
	Molybdenum	3.56E-05	1.00E-06	0.00E+00	0.00E+00	5.33E-08	2.44E-08	0.00E+00	7.94E-07	0.00E+00	2.77E-05	6.51E-05
	Uranium	1.03E-04	2.90E-06	2.05E-09	9.38E-09	9.41E-07	4.31E-06	0.00E+00	2.87E-04	9.12E-06	7.98E-05	4.87E-04
Subsistence Harvester One-year-old (Lloyd Lake)		**Base Case**										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	7.32E-06	2.61E-08	8.54E-08	1.02E-09	3.95E-07	4.73E-09	0.00E+00	1.54E-05	2.27E-05	6.44E-05	1.10E-04
	Copper	1.40E-07	1.25E-09	1.74E-09	1.25E-10	8.76E-09	6.30E-10	0.00E+00	7.18E-06	1.39E-06	1.74E-05	2.61E-05
	Molybdenum	5.84E-06	5.22E-08	1.21E-08	1.45E-10	3.91E-07	4.69E-09	0.00E+00	1.02E-07	9.10E-06	1.59E-05	3.14E-05
	Uranium	1.93E-04	1.72E-06	1.27E-06	1.53E-07	3.25E-05	3.90E-06	0.00E+00	4.38E-04	4.80E-04	1.18E-04	1.27E-03

Table 5-24: Estimated Non-carcinogen Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

		RFD Case HQs										
Human	**COPC**	**Water (internal)**	**Water (External)**	**Soil (Internal)**	**Soil (External)**	**Sediment (internal)**	**Sediment (External)**	**Aquatic Plants**	**Aquatic Animals**	**Terrestrial Plants**	**Terrestrial Animals**	**Total by COPC**
		Far Future - Incremental Project Risk										
	Cobalt	2.28E-05	8.15E-08	4.63E-08	5.54E-10	1.58E-06	1.89E-08	0.00E+00	5.19E-05	2.22E-06	1.12E-04	1.91E-04
	Copper	8.08E-07	7.21E-09	1.16E-10	8.36E-12	6.70E-08	4.81E-09	0.00E+00	4.21E-05	6.40E-08	2.62E-05	6.93E-05
	Molybdenum	4.84E-05	4.32E-07	0.00E+00	0.00E+00	4.24E-06	5.08E-08	0.00E+00	9.16E-07	0.00E+00	3.39E-05	8.79E-05
	Uranium	1.15E-04	1.03E-06	1.34E-07	1.60E-08	6.15E-05	7.37E-06	0.00E+00	2.72E-04	1.80E-05	5.89E-05	5.34E-04
Seasonal Resident (Patterson Lake South Arm)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	8.76E-05	9.86E-07	7.84E-10	3.59E-10	6.61E-08	3.02E-08	0.00E+00	6.82E-05	4.53E-06	1.59E-04	3.20E-04
	Copper	1.72E-06	4.82E-08	1.60E-11	4.39E-11	1.49E-09	4.10E-09	0.00E+00	3.28E-05	3.11E-07	6.93E-05	1.04E-04
	Molybdenum	5.76E-05	1.62E-06	9.10E-11	4.17E-11	5.51E-08	2.52E-08	0.00E+00	3.74E-07	1.47E-06	4.10E-05	1.02E-04
	Uranium	3.21E-03	9.03E-05	1.77E-06	8.10E-06	8.83E-06	4.04E-05	0.00E+00	2.72E-03	1.51E-02	5.67E-03	2.69E-02
		Far Future - Incremental Project Risk										
	Cobalt	2.26E-04	2.54E-06	4.25E-10	1.94E-10	2.67E-07	1.22E-07	0.00E+00	1.92E-04	5.31E-07	7.00E-04	1.12E-03
	Copper	8.13E-06	2.29E-07	1.07E-12	2.93E-12	1.15E-08	3.16E-08	0.00E+00	1.58E-04	1.53E-08	1.87E-04	3.53E-04
	Molybdenum	4.02E-04	1.13E-05	0.00E+00	0.00E+00	6.02E-07	2.76E-07	0.00E+00	2.84E-06	0.00E+00	1.80E-04	5.97E-04
	Uranium	1.84E-03	5.17E-05	1.86E-07	8.51E-07	1.68E-05	7.68E-05	0.00E+00	1.62E-03	6.49E-04	1.05E-03	5.30E-03
Seasonal Resident One-year-old (Patterson Lake South Arm)		**Base Case**										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	9.78E-05	3.49E-07	5.12E-08	6.14E-10	4.32E-06	5.17E-08	0.00E+00	6.46E-05	7.54E-06	1.63E-04	3.38E-04
	Copper	1.92E-06	1.71E-08	1.04E-09	7.51E-11	9.77E-08	7.02E-09	0.00E+00	3.11E-05	6.24E-07	7.02E-05	1.04E-04
	Molybdenum	7.83E-05	6.99E-07	7.24E-09	8.68E-11	4.38E-06	5.25E-08	0.00E+00	4.31E-07	2.88E-06	5.24E-05	1.39E-04
	Uranium	3.58E-03	3.20E-05	1.16E-04	1.39E-05	5.77E-04	6.91E-05	0.00E+00	2.58E-03	2.71E-02	4.17E-03	3.82E-02
		Far Future - Incremental Project Risk										
	Cobalt	2.52E-04	9.02E-07	2.78E-08	3.33E-10	1.75E-05	2.09E-07	0.00E+00	1.82E-04	1.16E-06	7.22E-04	1.18E-03
	Copper	9.08E-06	8.11E-08	6.98E-11	5.02E-12	7.53E-07	5.41E-08	0.00E+00	1.50E-04	3.34E-08	1.77E-04	3.37E-04
	Molybdenum	5.47E-04	4.88E-06	0.00E+00	0.00E+00	4.79E-05	5.74E-07	0.00E+00	3.28E-06	0.00E+00	2.24E-04	8.28E-04
	Uranium	2.05E-03	1.83E-05	1.22E-05	1.46E-06	1.10E-03	1.31E-04	0.00E+00	1.54E-03	1.42E-03	7.65E-04	7.03E-03
Seasonal Resident (Lloyd Lake)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	3.93E-06	4.43E-08	7.84E-10	3.59E-10	3.62E-09	1.66E-09	0.00E+00	5.54E-06	4.53E-06	1.47E-05	2.88E-05
	Copper	7.51E-08	2.11E-09	1.60E-11	4.39E-11	8.05E-11	2.21E-10	0.00E+00	1.88E-04	3.11E-07	4.24E-06	1.93E-04
	Molybdenum	2.58E-06	7.25E-08	9.10E-11	4.17E-11	2.95E-09	1.35E-09	0.00E+00	2.93E-08	1.47E-06	2.98E-06	7.13E-06
	Uranium	1.04E-04	2.92E-06	1.17E-08	5.35E-08	2.98E-07	1.37E-06	0.00E+00	7.09E-04	9.99E-05	3.26E-05	9.50E-04
		Far Future - Incremental Project Risk										
	Cobalt	1.23E-05	1.38E-07	4.25E-10	1.94E-10	1.45E-08	6.63E-09	0.00E+00	1.76E-05	5.31E-07	2.67E-05	5.72E-05
	Copper	4.34E-07	1.22E-08	1.07E-12	2.93E-12	6.15E-10	1.69E-09	0.00E+00	2.04E-04	1.53E-08	7.19E-06	2.12E-04
	Molybdenum	2.14E-05	6.01E-07	0.00E+00	0.00E+00	3.20E-08	1.46E-08	0.00E+00	2.52E-07	0.00E+00	6.65E-06	2.89E-05
	Uranium	6.19E-05	1.74E-06	1.23E-09	5.63E-09	5.64E-07	2.58E-06	0.00E+00	6.37E-04	4.29E-06	2.26E-05	7.30E-04

Table 5-24: Estimated Non-carcinogen Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

		RFD Case HQs										
Human	**COPC**	**Water (internal)**	**Water (External)**	**Soil (Internal)**	**Soil (External)**	**Sediment (internal)**	**Sediment (External)**	**Aquatic Plants**	**Aquatic Animals**	**Terrestrial Plants**	**Terrestrial Animals**	**Total by COPC**
Seasonal Resident One-year-old (Lloyd Lake)		**Base Case**										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Project Lifespan - Incremental Project Risk										
	Cobalt	4.39E-06	1.57E-08	5.12E-08	6.14E-10	2.37E-07	2.84E-09	0.00E+00	2.93E-06	7.54E-06	1.50E-05	3.02E-05
	Copper	8.39E-08	7.49E-10	1.04E-09	7.51E-11	5.26E-09	3.78E-10	0.00E+00	1.36E-06	6.24E-07	4.08E-06	6.16E-06
	Molybdenum	3.51E-06	3.13E-08	7.24E-09	8.68E-11	2.35E-07	2.81E-09	0.00E+00	1.94E-08	2.88E-06	3.73E-06	1.04E-05
	Uranium	1.16E-04	1.03E-06	7.64E-07	9.16E-08	1.95E-05	2.34E-06	0.00E+00	8.33E-05	1.79E-04	2.30E-05	4.25E-04
		Far Future - Incremental Project Risk										
	Cobalt	1.37E-05	4.89E-08	2.78E-08	3.33E-10	9.47E-07	1.13E-08	0.00E+00	9.86E-06	1.16E-06	2.70E-05	5.27E-05
	Copper	4.85E-07	4.33E-09	6.98E-11	5.02E-12	4.02E-08	2.89E-09	0.00E+00	8.00E-06	3.34E-08	6.53E-06	1.51E-05
	Molybdenum	2.90E-05	2.59E-07	0.00E+00	0.00E+00	2.54E-06	3.05E-08	0.00E+00	1.74E-07	0.00E+00	8.14E-06	4.02E-05
	Uranium	6.91E-05	6.17E-07	8.03E-08	9.63E-09	3.69E-05	4.42E-06	0.00E+00	5.18E-05	9.37E-06	1.62E-05	1.88E-04
Permanent Resident (Patterson Lake North Arm - West Basin)		**Base Case**										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Base Case One-year-old										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Far future Adult - Incremental Project Risk										
	Cobalt	1.24E-03	1.40E-05	1.42E-09	6.48E-10	1.47E-06	6.72E-07	0.00E+00	3.32E-03	2.26E-06	6.36E-03	1.09E-02
	Copper	4.62E-05	1.30E-06	6.13E-11	1.68E-10	6.54E-08	1.80E-07	0.00E+00	2.84E-03	1.12E-06	1.81E-03	4.69E-03
	Molybdenum	2.31E-03	6.50E-05	0.00E+00	0.00E+00	3.46E-06	1.58E-06	0.00E+00	5.15E-05	0.00E+00	1.80E-03	4.23E-03
	Uranium	2.21E-02	6.23E-04	3.88E-06	1.78E-05	2.02E-04	9.25E-04	0.00E+00	6.17E-02	1.73E-02	3.09E-02	1.34E-01
		Far future One-year-old - Incremental Project Risk										
	Cobalt	1.39E-03	4.95E-06	9.25E-08	1.11E-09	9.59E-05	1.15E-06	0.00E+00	3.15E-03	4.45E-06	6.46E-03	1.11E-02
	Copper	5.16E-05	4.60E-07	4.00E-09	2.88E-10	4.28E-06	3.07E-07	0.00E+00	2.69E-03	2.20E-06	1.67E-03	4.41E-03
	Molybdenum	3.14E-03	2.80E-05	0.00E+00	0.00E+00	2.75E-04	3.30E-06	0.00E+00	5.95E-05	0.00E+00	2.20E-03	5.70E-03
	Uranium	2.47E-02	2.21E-04	2.54E-04	3.04E-05	1.32E-02	1.58E-03	0.00E+00	5.85E-02	3.41E-02	2.24E-02	1.55E-01

Note: Underlined values indicate exceedance of the HQ of 0.2 for a given exposure pathway; **Bolded values** indicate exceedance of the HQ of 1 for all exposure pathways.
HQ = hazard quotient; COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table C13: Estimated Non-carcinogen Total Risk to Human Receptors – Project Lifespan – Application Case and Upper Bound Scenario (Updated)

Human	Project Lifespan HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-06	1.01E-06	4.64E-06	0.00E+00	1.15E-03	7.21E-04	1.97E-02	2.25E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-07	4.12E-08	1.13E-06	0.00E+00	8.94E-04	2.69E-04	3.89E-02	4.01E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-07	1.62E-07	7.43E-07	0.00E+00	1.21E-06	1.46E-04	8.23E-02	8.25E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-04	2.24E-05	1.03E-03	0.00E+00	3.43E-03	1.92E-02	7.29E-02	9.95E-02
		Application Case - Total Project Risk										
	Cobalt	8.63E-04	9.71E-06	9.07E-07	4.15E-06	1.02E-06	4.66E-06	0.00E+00	1.25E-03	7.29E-04	2.01E-02	2.29E-02
	Copper	2.91E-05	8.19E-07	3.00E-08	8.23E-07	4.12E-08	1.13E-06	0.00E+00	9.36E-04	2.71E-04	3.91E-02	4.03E-02
	Molybdenum	1.09E-04	3.05E-06	1.08E-07	4.96E-07	1.62E-07	7.43E-07	0.00E+00	1.79E-06	1.52E-04	8.24E-02	8.26E-02
	Uranium	2.46E-03	6.92E-05	2.77E-05	1.27E-03	2.24E-05	1.03E-03	0.00E+00	4.71E-03	4.06E-02	8.68E-02	1.37E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.63E-04	9.71E-06	9.07E-07	4.15E-06	1.02E-06	4.66E-06	0.00E+00	1.25E-03	7.29E-04	2.01E-02	2.30E-02
	Copper	2.91E-05	8.19E-07	3.00E-08	8.23E-07	4.12E-08	1.13E-06	0.00E+00	9.37E-04	2.71E-04	3.91E-02	4.03E-02
	Molybdenum	1.09E-04	3.05E-06	1.08E-07	4.96E-07	1.62E-07	7.43E-07	0.00E+00	2.97E-06	1.52E-04	8.24E-02	8.27E-02
	Uranium	2.47E-03	6.95E-05	2.77E-05	1.27E-03	2.25E-05	1.03E-03	0.00E+00	6.96E-03	4.06E-02	8.74E-02	1.40E-01
Subsistence Harvester (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Total Project Risk										
	Cobalt	9.32E-04	1.05E-05	9.05E-07	4.14E-07	1.09E-06	5.00E-07	0.00E+00	2.49E-03	1.46E-03	2.51E-02	3.00E-02
	Copper	3.05E-05	8.57E-07	2.96E-08	8.12E-08	4.29E-08	1.18E-07	0.00E+00	1.87E-03	5.41E-04	4.15E-02	4.39E-02
	Molybdenum	1.61E-04	4.53E-06	1.07E-07	4.88E-08	2.32E-07	1.06E-07	0.00E+00	3.57E-06	3.03E-04	6.99E-02	7.04E-02
	Uranium	3.39E-03	9.54E-05	1.12E-05	5.14E-05	2.92E-05	1.34E-04	0.00E+00	9.42E-03	8.12E-02	1.10E-01	2.04E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.35E-04	1.05E-05	9.05E-07	4.14E-07	1.10E-06	5.02E-07	0.00E+00	2.50E-03	1.46E-03	2.51E-02	3.00E-02
	Copper	3.05E-05	8.58E-07	2.96E-08	8.12E-08	4.30E-08	1.18E-07	0.00E+00	1.87E-03	5.41E-04	4.15E-02	4.39E-02
	Molybdenum	2.68E-04	7.55E-06	1.07E-07	4.88E-08	3.79E-07	1.74E-07	0.00E+00	5.93E-06	3.03E-04	7.01E-02	7.07E-02
	Uranium	5.02E-03	1.41E-04	1.12E-05	5.14E-05	4.14E-05	1.89E-04	0.00E+00	1.39E-02	8.12E-02	1.11E-01	2.11E-01
Subsistence Harvester One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	1.04E-03	3.72E-06	5.91E-05	7.09E-07	7.14E-05	8.56E-07	0.00E+00	2.36E-03	2.86E-03	4.85E-02	5.49E-02
	Copper	3.40E-05	3.04E-07	1.93E-06	1.39E-07	2.81E-06	2.02E-07	0.00E+00	1.77E-03	1.07E-03	9.73E-02	1.00E-01
	Molybdenum	2.19E-04	1.95E-06	8.49E-06	1.02E-07	1.85E-05	2.21E-07	0.00E+00	4.12E-06	7.20E-04	2.64E-01	2.65E-01
	Uranium	3.79E-03	3.38E-05	7.34E-04	8.80E-05	1.91E-03	2.29E-04	0.00E+00	8.93E-03	1.40E-01	1.91E-01	3.46E-01

Table C13: Estimated Non-carcinogen Total Risk to Human Receptors – Project Lifespan – Application Case and Upper Bound Scenario (Updated)

Human	Project Lifespan HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.04E-03	3.73E-06	5.91E-05	7.09E-07	7.16E-05	8.59E-07	0.00E+00	2.37E-03	2.86E-03	4.85E-02	5.49E-02
	Copper	3.41E-05	3.04E-07	1.93E-06	1.39E-07	2.81E-06	2.02E-07	0.00E+00	1.78E-03	1.07E-03	9.73E-02	1.00E-01
	Molybdenum	3.65E-04	3.26E-06	8.49E-06	1.02E-07	3.02E-05	3.61E-07	0.00E+00	6.84E-06	7.20E-04	2.64E-01	2.65E-01
	Uranium	5.61E-03	5.01E-05	7.34E-04	8.80E-05	2.70E-03	3.24E-04	0.00E+00	1.32E-02	1.40E-01	1.91E-01	3.54E-01
Subsistence Harvester (Beet Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Total Project Risk										
	Cobalt	8.97E-04	1.01E-05	9.05E-07	4.14E-07	1.06E-06	4.83E-07	0.00E+00	2.40E-03	1.46E-03	2.47E-02	2.94E-02
	Copper	2.98E-05	8.38E-07	2.96E-08	8.12E-08	4.21E-08	1.16E-07	0.00E+00	1.83E-03	5.40E-04	4.12E-02	4.36E-02
	Molybdenum	1.35E-04	3.81E-06	1.07E-07	4.88E-08	1.98E-07	9.07E-08	0.00E+00	3.01E-06	2.98E-04	6.98E-02	7.02E-02
	Uranium	2.80E-03	7.88E-05	1.02E-05	4.65E-05	2.49E-05	1.14E-04	0.00E+00	7.79E-03	6.36E-02	9.24E-02	1.67E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.98E-04	1.01E-05	9.05E-07	4.14E-07	1.06E-06	4.84E-07	0.00E+00	2.40E-03	1.46E-03	2.47E-02	2.94E-02
	Copper	2.98E-05	8.39E-07	2.96E-08	8.12E-08	4.21E-08	1.16E-07	0.00E+00	1.83E-03	5.40E-04	4.12E-02	4.36E-02
	Molybdenum	1.91E-04	5.37E-06	1.07E-07	4.88E-08	2.74E-07	1.25E-07	0.00E+00	4.23E-06	2.98E-04	6.98E-02	7.03E-02
	Uranium	3.40E-03	9.57E-05	1.02E-05	4.65E-05	2.94E-05	1.34E-04	0.00E+00	9.44E-03	6.36E-02	9.28E-02	1.70E-01
Subsistence Harvester One-year-old (Beet Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	1.00E-03	3.57E-06	5.91E-05	7.09E-07	6.89E-05	8.26E-07	0.00E+00	2.27E-03	2.86E-03	4.80E-02	5.43E-02
	Copper	3.33E-05	2.97E-07	1.93E-06	1.39E-07	2.75E-06	1.98E-07	0.00E+00	1.73E-03	1.06E-03	9.71E-02	9.99E-02
	Molybdenum	1.84E-04	1.64E-06	8.47E-06	1.02E-07	1.58E-05	1.89E-07	0.00E+00	3.47E-06	7.11E-04	2.64E-01	2.64E-01
	Uranium	3.13E-03	2.79E-05	6.64E-04	7.96E-05	1.63E-03	1.95E-04	0.00E+00	7.39E-03	1.14E-01	1.78E-01	3.04E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.00E-03	3.58E-06	5.91E-05	7.09E-07	6.91E-05	8.28E-07	0.00E+00	2.28E-03	2.86E-03	4.81E-02	5.43E-02
	Copper	3.33E-05	2.97E-07	1.93E-06	1.39E-07	2.75E-06	1.98E-07	0.00E+00	1.74E-03	1.06E-03	9.71E-02	9.99E-02
	Molybdenum	2.60E-04	2.32E-06	8.47E-06	1.02E-07	2.18E-05	2.61E-07	0.00E+00	4.88E-06	7.11E-04	2.64E-01	2.65E-01
	Uranium	3.80E-03	3.39E-05	6.64E-04	7.96E-05	1.92E-03	2.30E-04	0.00E+00	8.95E-03	1.14E-01	1.78E-01	3.07E-01
Subsistence Harvester (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01

Table C13: Estimated Non-carcinogen Total Risk to Human Receptors – Project Lifespan – Application Case and Upper Bound Scenario (Updated)

Human	Project Lifespan HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Application Case - Total Project Risk										
	Cobalt	8.62E-04	9.69E-06	9.05E-07	4.14E-07	1.02E-06	4.66E-07	0.00E+00	2.31E-03	1.46E-03	2.45E-02	2.91E-02
	Copper	2.92E-05	8.20E-07	2.95E-08	8.11E-08	4.13E-08	1.13E-07	0.00E+00	1.79E-03	5.39E-04	4.12E-02	4.36E-02
	Molybdenum	1.11E-04	3.13E-06	1.07E-07	4.88E-08	1.66E-07	7.59E-08	0.00E+00	2.48E-06	2.98E-04	6.98E-02	7.02E-02
	Uranium	2.49E-03	7.01E-05	8.68E-06	3.97E-05	2.27E-05	1.04E-04	0.00E+00	6.94E-03	3.93E-02	8.24E-02	1.31E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.62E-04	9.70E-06	9.05E-07	4.14E-07	1.02E-06	4.66E-07	0.00E+00	2.31E-03	1.46E-03	2.45E-02	2.91E-02
	Copper	2.92E-05	8.21E-07	2.95E-08	8.11E-08	4.13E-08	1.13E-07	0.00E+00	1.79E-03	5.39E-04	4.12E-02	4.36E-02
	Molybdenum	1.17E-04	3.29E-06	1.07E-07	4.88E-08	1.74E-07	7.95E-08	0.00E+00	2.60E-06	2.98E-04	6.98E-02	7.02E-02
	Uranium	2.55E-03	7.16E-05	8.68E-06	3.97E-05	2.31E-05	1.06E-04	0.00E+00	7.09E-03	3.93E-02	8.24E-02	1.32E-01
Subsistence Harvester One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	9.62E-04	3.44E-06	5.91E-05	7.09E-07	6.65E-05	7.97E-07	0.00E+00	2.19E-03	2.86E-03	4.79E-02	5.40E-02
	Copper	3.26E-05	2.91E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	1.70E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.51E-04	1.35E-06	8.47E-06	1.02E-07	1.32E-05	1.58E-07	0.00E+00	2.86E-06	7.11E-04	2.64E-01	2.64E-01
	Uranium	2.78E-03	2.48E-05	5.67E-04	6.80E-05	1.48E-03	1.77E-04	0.00E+00	6.58E-03	7.71E-02	1.71E-01	2.59E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.62E-04	3.44E-06	5.91E-05	7.09E-07	6.65E-05	7.97E-07	0.00E+00	2.19E-03	2.86E-03	4.79E-02	5.40E-02
	Copper	3.26E-05	2.91E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	1.70E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.59E-04	1.42E-06	8.47E-06	1.02E-07	1.38E-05	1.66E-07	0.00E+00	3.01E-06	7.11E-04	2.64E-01	2.64E-01
	Uranium	2.84E-03	2.54E-05	5.67E-04	6.80E-05	1.51E-03	1.81E-04	0.00E+00	6.72E-03	7.71E-02	1.71E-01	2.60E-01
Seasonal Resident (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Total Project Risk										
	Cobalt	9.02E-04	1.02E-05	9.05E-07	4.14E-07	1.06E-06	4.86E-07	0.00E+00	7.65E-04	1.13E-03	1.89E-02	2.18E-02
	Copper	2.99E-05	8.42E-07	2.95E-08	8.12E-08	4.22E-08	1.16E-07	0.00E+00	5.82E-04	4.23E-04	3.87E-02	3.97E-02
	Molybdenum	1.40E-04	3.94E-06	1.07E-07	4.88E-08	2.04E-07	9.35E-08	0.00E+00	9.85E-07	2.32E-04	8.60E-02	8.64E-02
	Uranium	3.02E-03	8.49E-05	1.02E-05	4.66E-05	2.65E-05	1.21E-04	0.00E+00	2.66E-03	4.35E-02	7.31E-02	1.23E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.04E-04	1.02E-05	9.05E-07	4.14E-07	1.06E-06	4.87E-07	0.00E+00	7.66E-04	1.13E-03	1.89E-02	2.18E-02
	Copper	3.00E-05	8.42E-07	2.95E-08	8.12E-08	4.23E-08	1.16E-07	0.00E+00	5.82E-04	4.23E-04	3.87E-02	3.97E-02
	Molybdenum	2.04E-04	5.75E-06	1.07E-07	4.88E-08	2.92E-07	1.34E-07	0.00E+00	1.43E-06	2.32E-04	8.61E-02	8.65E-02
	Uranium	4.00E-03	1.12E-04	1.02E-05	4.66E-05	3.38E-05	1.55E-04	0.00E+00	3.51E-03	4.35E-02	7.34E-02	1.25E-01

Table C13: Estimated Non-carcinogen Total Risk to Human Receptors – Project Lifespan – Application Case and Upper Bound Scenario (Updated)

Human	Project Lifespan HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Total Project Risk										
	Cobalt	1.01E-03	3.60E-06	5.91E-05	7.08E-07	6.94E-05	8.31E-07	0.00E+00	7.25E-04	2.48E-03	4.15E-02	4.59E-02
	Copper	3.34E-05	2.98E-07	1.93E-06	1.39E-07	2.76E-06	1.99E-07	0.00E+00	5.52E-04	9.24E-04	9.32E-02	9.47E-02
	Molybdenum	1.90E-04	1.70E-06	8.48E-06	1.02E-07	1.62E-05	1.95E-07	0.00E+00	1.14E-06	6.16E-04	2.77E-01	2.78E-01
	Uranium	3.37E-03	3.01E-05	6.66E-04	7.98E-05	1.73E-03	2.07E-04	0.00E+00	2.52E-03	8.97E-02	1.64E-01	2.63E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.01E-03	3.61E-06	5.91E-05	7.08E-07	6.95E-05	8.33E-07	0.00E+00	7.26E-04	2.48E-03	4.15E-02	4.59E-02
	Copper	3.34E-05	2.99E-07	1.93E-06	1.39E-07	2.76E-06	1.99E-07	0.00E+00	5.52E-04	9.24E-04	9.32E-02	9.47E-02
	Molybdenum	2.78E-04	2.48E-06	8.48E-06	1.02E-07	2.33E-05	2.79E-07	0.00E+00	1.65E-06	6.16E-04	2.77E-01	2.78E-01
	Uranium	4.46E-03	3.98E-05	6.66E-04	7.98E-05	2.21E-03	2.65E-04	0.00E+00	3.33E-03	8.97E-02	1.64E-01	2.65E-01
Seasonal Resident (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Total Project Risk										
	Cobalt	8.60E-04	9.68E-06	9.05E-07	4.14E-07	1.02E-06	4.65E-07	0.00E+00	7.31E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.20E-07	2.95E-08	8.11E-08	4.13E-08	1.13E-07	0.00E+00	7.53E-04	4.22E-04	3.86E-02	3.98E-02
	Molybdenum	1.10E-04	3.10E-06	1.06E-07	4.87E-08	1.64E-07	7.53E-08	0.00E+00	7.86E-07	2.31E-04	8.60E-02	8.64E-02
	Uranium	2.48E-03	6.97E-05	8.66E-06	3.96E-05	2.26E-05	1.03E-04	0.00E+00	2.73E-03	3.04E-02	6.80E-02	1.04E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.60E-04	9.68E-06	9.05E-07	4.14E-07	1.02E-06	4.65E-07	0.00E+00	7.31E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.20E-07	2.95E-08	8.11E-08	4.13E-08	1.13E-07	0.00E+00	7.53E-04	4.22E-04	3.86E-02	3.98E-02
	Molybdenum	1.14E-04	3.19E-06	1.06E-07	4.87E-08	1.69E-07	7.74E-08	0.00E+00	8.26E-07	2.31E-04	8.60E-02	8.64E-02
	Uranium	2.51E-03	7.06E-05	8.66E-06	3.96E-05	2.28E-05	1.04E-04	0.00E+00	2.79E-03	3.04E-02	6.80E-02	1.04E-01
Seasonal Resident One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Total Project Risk										
	Cobalt	9.60E-04	3.43E-06	5.91E-05	7.08E-07	6.64E-05	7.96E-07	0.00E+00	6.91E-04	2.48E-03	4.14E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	5.37E-04	9.23E-04	9.32E-02	9.47E-02
	Molybdenum	1.50E-04	1.34E-06	8.47E-06	1.02E-07	1.31E-05	1.57E-07	0.00E+00	8.97E-07	6.13E-04	2.77E-01	2.78E-01
	Uranium	2.77E-03	2.47E-05	5.66E-04	6.78E-05	1.47E-03	1.77E-04	0.00E+00	2.07E-03	6.63E-02	1.60E-01	2.34E-01

Table C13: Estimated Non-carcinogen Total Risk to Human Receptors – Project Lifespan – Application Case and Upper Bound Scenario (Updated)

Human	Project Lifespan HQs										
	COPC	Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.60E-04	3.43E-06	5.91E-05	7.08E-07	6.64E-05	7.96E-07	0.00E+00	6.91E-04	2.48E-03	4.14E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	5.37E-04	9.23E-04	9.32E-02	9.47E-02
	Molybdenum	1.54E-04	1.38E-06	8.47E-06	1.02E-07	1.35E-05	1.61E-07	0.00E+00	9.25E-07	6.13E-04	2.77E-01	2.78E-01
	Uranium	2.80E-03	2.50E-05	5.66E-04	6.78E-05	1.49E-03	1.79E-04	0.00E+00	2.10E-03	6.63E-02	1.60E-01	2.34E-01
Permanent Resident (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Application Case - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Upper Bound Scenario - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Permanent Resident One-year-old (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Application Case - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Upper Bound Scenario - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: Underlined values indicate exceedance of the HQ of 0.2 for a given exposure pathway; **Bolded values** indicate exceedance of the HQ of 1 for all exposure pathways.
HQ = hazard quotient; COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table C14: Estimated Non-carcinogen Total Risk to Human Receptors – Far Future – Application Case and Upper Bound Scenario (Updated)

Human	COPC	Far Future HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Application Case - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		Upper Bound Scenario - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Total Project Risk										
	Cobalt	1.23E-03	1.39E-05	9.05E-07	4.14E-07	1.46E-06	6.68E-07	0.00E+00	3.30E-03	1.44E-03	2.73E-02	3.33E-02
	Copper	4.27E-05	1.20E-06	2.95E-08	8.10E-08	6.04E-08	1.66E-07	0.00E+00	2.62E-03	5.38E-04	4.19E-02	4.51E-02
	Molybdenum	7.79E-04	2.19E-05	1.06E-07	4.87E-08	1.17E-06	5.34E-07	0.00E+00	1.74E-05	2.92E-04	7.05E-02	7.16E-02
	Uranium	5.52E-03	1.55E-04	8.90E-06	4.07E-05	5.04E-05	2.31E-04	0.00E+00	1.54E-02	3.96E-02	8.62E-02	1.47E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.44E-03	1.61E-05	9.05E-07	4.14E-07	1.70E-06	7.77E-07	0.00E+00	3.84E-03	1.44E-03	2.89E-02	3.57E-02
	Copper	4.95E-05	1.39E-06	2.95E-08	8.10E-08	7.01E-08	1.92E-07	0.00E+00	3.04E-03	5.38E-04	4.23E-02	4.60E-02
	Molybdenum	2.68E-03	7.54E-05	1.06E-07	4.87E-08	4.01E-06	1.84E-06	0.00E+00	5.98E-05	2.92E-04	7.27E-02	7.58E-02
	Uranium	5.53E-03	1.55E-04	8.90E-06	4.07E-05	5.04E-05	2.31E-04	0.00E+00	1.54E-02	3.96E-02	8.62E-02	1.47E-01
Subsistence Harvester One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	1.38E-03	4.92E-06	5.91E-05	7.08E-07	9.54E-05	1.14E-06	0.00E+00	3.13E-03	2.84E-03	5.08E-02	5.83E-02
	Copper	4.76E-05	4.25E-07	1.93E-06	1.39E-07	3.95E-06	2.84E-07	0.00E+00	2.48E-03	1.06E-03	9.77E-02	1.01E-01
	Molybdenum	1.06E-03	9.45E-06	8.46E-06	1.01E-07	9.27E-05	1.11E-06	0.00E+00	2.00E-05	7.01E-04	2.64E-01	2.66E-01
	Uranium	6.17E-03	5.51E-05	5.81E-04	6.97E-05	3.29E-03	3.94E-04	0.00E+00	1.46E-02	7.81E-02	1.73E-01	2.77E-01

Table C14: Estimated Non-carcinogen Total Risk to Human Receptors – Far Future – Application Case and Upper Bound Scenario (Updated)

Human	COPC	Far Future HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.60E-03	5.72E-06	5.91E-05	7.08E-07	1.11E-04	1.33E-06	0.00E+00	3.64E-03	2.84E-03	5.25E-02	6.07E-02
	Copper	5.52E-05	4.93E-07	1.93E-06	1.39E-07	4.58E-06	3.29E-07	0.00E+00	2.88E-03	1.06E-03	9.81E-02	1.02E-01
	Molybdenum	3.65E-03	3.26E-05	8.46E-06	1.01E-07	3.19E-04	3.83E-06	0.00E+00	6.91E-05	7.01E-04	2.67E-01	2.72E-01
	Uranium	6.17E-03	5.51E-05	5.81E-04	6.97E-05	3.29E-03	3.95E-04	0.00E+00	1.46E-02	7.81E-02	1.73E-01	2.77E-01
Subsistence Harvester (Beet Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Total Project Risk										
	Cobalt	1.06E-03	1.19E-05	9.05E-07	4.14E-07	1.25E-06	5.72E-07	0.00E+00	2.83E-03	1.44E-03	2.54E-02	3.08E-02
	Copper	3.62E-05	1.02E-06	2.95E-08	8.10E-08	5.13E-08	1.41E-07	0.00E+00	2.22E-03	5.38E-04	4.15E-02	4.43E-02
	Molybdenum	4.57E-04	1.29E-05	1.06E-07	4.87E-08	6.85E-07	3.13E-07	0.00E+00	1.02E-05	2.92E-04	7.00E-02	7.08E-02
	Uranium	3.60E-03	1.01E-04	8.79E-06	4.02E-05	3.28E-05	1.50E-04	0.00E+00	1.00E-02	3.91E-02	8.34E-02	1.36E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.16E-03	1.31E-05	9.05E-07	4.14E-07	1.38E-06	6.29E-07	0.00E+00	3.11E-03	1.44E-03	2.60E-02	3.17E-02
	Copper	3.97E-05	1.12E-06	2.95E-08	8.10E-08	5.63E-08	1.55E-07	0.00E+00	2.44E-03	5.38E-04	4.16E-02	4.46E-02
	Molybdenum	1.45E-03	4.07E-05	1.06E-07	4.87E-08	2.17E-06	9.93E-07	0.00E+00	3.23E-05	2.92E-04	7.08E-02	7.26E-02
	Uranium	3.60E-03	1.01E-04	8.79E-06	4.02E-05	3.28E-05	1.50E-04	0.00E+00	1.00E-02	3.91E-02	8.34E-02	1.36E-01
Subsistence Harvester One-year-old (Beet Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	1.18E-03	4.21E-06	5.91E-05	7.08E-07	8.17E-05	9.79E-07	0.00E+00	2.68E-03	2.84E-03	4.89E-02	5.57E-02
	Copper	4.04E-05	3.61E-07	1.93E-06	1.39E-07	3.35E-06	2.41E-07	0.00E+00	2.11E-03	1.06E-03	9.73E-02	1.00E-01
	Molybdenum	6.22E-04	5.55E-06	8.46E-06	1.01E-07	5.45E-05	6.53E-07	0.00E+00	1.18E-05	7.01E-04	2.64E-01	2.65E-01
	Uranium	4.02E-03	3.59E-05	5.74E-04	6.88E-05	2.14E-03	2.57E-04	0.00E+00	9.50E-03	7.71E-02	1.71E-01	2.65E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.30E-03	4.64E-06	5.91E-05	7.08E-07	8.99E-05	1.08E-06	0.00E+00	2.95E-03	2.84E-03	4.94E-02	5.67E-02
	Copper	4.44E-05	3.96E-07	1.93E-06	1.39E-07	3.68E-06	2.65E-07	0.00E+00	2.31E-03	1.06E-03	9.74E-02	1.01E-01
	Molybdenum	1.97E-03	1.76E-05	8.46E-06	1.01E-07	1.72E-04	2.07E-06	0.00E+00	3.73E-05	7.01E-04	2.65E-01	2.68E-01
	Uranium	4.02E-03	3.59E-05	5.74E-04	6.88E-05	2.15E-03	2.57E-04	0.00E+00	9.51E-03	7.71E-02	1.71E-01	2.65E-01
Subsistence Harvester (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01

Table C14: Estimated Non-carcinogen Total Risk to Human Receptors – Far Future – Application Case and Upper Bound Scenario (Updated)

Human	COPC	Far Future HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Application Case - Total Project Risk										
	Cobalt	8.78E-04	9.88E-06	9.05E-07	4.14E-07	1.04E-06	4.75E-07	0.00E+00	2.35E-03	1.44E-03	2.45E-02	2.92E-02
	Copper	2.98E-05	8.39E-07	2.95E-08	8.10E-08	4.22E-08	1.16E-07	0.00E+00	1.83E-03	5.38E-04	4.12E-02	4.36E-02
	Molybdenum	1.44E-04	4.05E-06	1.06E-07	4.87E-08	2.15E-07	9.86E-08	0.00E+00	3.21E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.56E-03	7.21E-05	8.63E-06	3.95E-05	2.34E-05	1.07E-04	0.00E+00	7.14E-03	3.84E-02	8.21E-02	1.30E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.89E-04	1.00E-05	9.05E-07	4.14E-07	1.05E-06	4.81E-07	0.00E+00	2.38E-03	1.44E-03	2.46E-02	2.93E-02
	Copper	3.02E-05	8.49E-07	2.95E-08	8.10E-08	4.28E-08	1.17E-07	0.00E+00	1.85E-03	5.38E-04	4.12E-02	4.37E-02
	Molybdenum	2.45E-04	6.89E-06	1.06E-07	4.87E-08	3.67E-07	1.68E-07	0.00E+00	5.47E-06	2.92E-04	6.99E-02	7.04E-02
	Uranium	2.56E-03	7.21E-05	8.63E-06	3.95E-05	2.34E-05	1.07E-04	0.00E+00	7.14E-03	3.84E-02	8.21E-02	1.30E-01
Subsistence Harvester One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	9.80E-04	3.50E-06	5.91E-05	7.08E-07	6.78E-05	8.13E-07	0.00E+00	2.23E-03	2.84E-03	4.79E-02	5.41E-02
	Copper	3.33E-05	2.97E-07	1.93E-06	1.39E-07	2.76E-06	1.98E-07	0.00E+00	1.74E-03	1.06E-03	9.70E-02	9.99E-02
	Molybdenum	1.96E-04	1.75E-06	8.46E-06	1.01E-07	1.71E-05	2.05E-07	0.00E+00	3.71E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.86E-03	2.55E-05	5.64E-04	6.76E-05	1.53E-03	1.83E-04	0.00E+00	6.77E-03	7.57E-02	1.70E-01	2.58E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.93E-04	3.54E-06	5.91E-05	7.08E-07	6.87E-05	8.23E-07	0.00E+00	2.26E-03	2.84E-03	4.80E-02	5.42E-02
	Copper	3.37E-05	3.01E-07	1.93E-06	1.39E-07	2.79E-06	2.01E-07	0.00E+00	1.76E-03	1.06E-03	9.71E-02	9.99E-02
	Molybdenum	3.33E-04	2.97E-06	8.46E-06	1.01E-07	2.92E-05	3.50E-07	0.00E+00	6.31E-06	7.01E-04	2.64E-01	2.65E-01
	Uranium	2.86E-03	2.55E-05	5.64E-04	6.76E-05	1.53E-03	1.83E-04	0.00E+00	6.77E-03	7.57E-02	1.70E-01	2.58E-01
Seasonal Resident (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Total Project Risk										
	Cobalt	1.08E-03	1.22E-05	9.04E-07	4.14E-07	1.28E-06	5.86E-07	0.00E+00	9.19E-04	1.13E-03	1.95E-02	2.26E-02
	Copper	3.72E-05	1.05E-06	2.95E-08	8.10E-08	5.27E-08	1.45E-07	0.00E+00	7.24E-04	4.22E-04	3.88E-02	4.00E-02
	Molybdenum	5.11E-04	1.44E-05	1.06E-07	4.87E-08	7.64E-07	3.50E-07	0.00E+00	3.61E-06	2.29E-04	8.62E-02	8.69E-02
	Uranium	4.30E-03	1.21E-04	8.79E-06	4.02E-05	3.92E-05	1.79E-04	0.00E+00	3.79E-03	3.07E-02	6.90E-02	1.08E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.20E-03	1.35E-05	9.04E-07	4.14E-07	1.42E-06	6.52E-07	0.00E+00	1.02E-03	1.13E-03	1.99E-02	2.32E-02
	Copper	4.13E-05	1.16E-06	2.95E-08	8.10E-08	5.85E-08	1.61E-07	0.00E+00	8.04E-04	4.22E-04	3.89E-02	4.02E-02
	Molybdenum	1.65E-03	4.65E-05	1.06E-07	4.87E-08	2.47E-06	1.13E-06	0.00E+00	1.17E-05	2.29E-04	8.67E-02	8.86E-02
	Uranium	4.30E-03	1.21E-04	8.79E-06	4.02E-05	3.92E-05	1.80E-04	0.00E+00	3.79E-03	3.07E-02	6.90E-02	1.08E-01

Table C14: Estimated Non-carcinogen Total Risk to Human Receptors – Far Future – Application Case and Upper Bound Scenario (Updated)

Human	COPC	Far Future HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Total Project Risk										
	Cobalt	1.21E-03	4.32E-06	5.91E-05	7.08E-07	8.37E-05	1.00E-06	0.00E+00	8.71E-04	2.47E-03	4.21E-02	4.68E-02
	Copper	4.16E-05	3.71E-07	1.93E-06	1.39E-07	3.45E-06	2.48E-07	0.00E+00	6.86E-04	9.22E-04	9.33E-02	9.50E-02
	Molybdenum	6.94E-04	6.20E-06	8.46E-06	1.01E-07	6.08E-05	7.28E-07	0.00E+00	4.16E-06	6.10E-04	2.78E-01	2.79E-01
	Uranium	4.80E-03	4.28E-05	5.74E-04	6.88E-05	2.56E-03	3.07E-04	0.00E+00	3.60E-03	6.70E-02	1.61E-01	2.40E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	1.34E-03	4.80E-06	5.91E-05	7.08E-07	9.30E-05	1.11E-06	0.00E+00	9.68E-04	2.47E-03	4.25E-02	4.74E-02
	Copper	4.61E-05	4.12E-07	1.93E-06	1.39E-07	3.82E-06	2.75E-07	0.00E+00	7.62E-04	9.22E-04	9.34E-02	9.52E-02
	Molybdenum	2.25E-03	2.01E-05	8.46E-06	1.01E-07	1.97E-04	2.36E-06	0.00E+00	1.35E-05	6.10E-04	2.78E-01	2.81E-01
	Uranium	4.80E-03	4.29E-05	5.74E-04	6.88E-05	2.56E-03	3.07E-04	0.00E+00	3.60E-03	6.70E-02	1.61E-01	2.40E-01
Seasonal Resident (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Application Case - Total Project Risk										
	Cobalt	8.70E-04	9.79E-06	9.04E-07	4.14E-07	1.03E-06	4.71E-07	0.00E+00	7.45E-04	1.13E-03	1.88E-02	2.16E-02
	Copper	2.95E-05	8.31E-07	2.95E-08	8.10E-08	4.18E-08	1.15E-07	0.00E+00	7.70E-04	4.22E-04	3.86E-02	3.99E-02
	Molybdenum	1.30E-04	3.65E-06	1.06E-07	4.87E-08	1.94E-07	8.89E-08	0.00E+00	1.02E-06	2.29E-04	8.60E-02	8.64E-02
	Uranium	2.52E-03	7.09E-05	8.63E-06	3.95E-05	2.30E-05	1.05E-04	0.00E+00	2.81E-03	3.01E-02	6.80E-02	1.04E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	8.76E-04	9.86E-06	9.04E-07	4.14E-07	1.04E-06	4.74E-07	0.00E+00	7.54E-04	1.13E-03	1.88E-02	2.16E-02
	Copper	2.98E-05	8.37E-07	2.95E-08	8.10E-08	4.21E-08	1.16E-07	0.00E+00	7.79E-04	4.22E-04	3.86E-02	3.99E-02
	Molybdenum	1.90E-04	5.35E-06	1.06E-07	4.87E-08	2.85E-07	1.30E-07	0.00E+00	1.73E-06	2.29E-04	8.60E-02	8.65E-02
	Uranium	2.52E-03	7.09E-05	8.63E-06	3.95E-05	2.30E-05	1.05E-04	0.00E+00	2.81E-03	3.01E-02	6.80E-02	1.04E-01
Seasonal Resident One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Application Case - Total Project Risk										
	Cobalt	9.71E-04	3.47E-06	5.91E-05	7.08E-07	6.72E-05	8.05E-07	0.00E+00	6.99E-04	2.47E-03	4.14E-02	4.56E-02
	Copper	3.30E-05	2.94E-07	1.93E-06	1.39E-07	2.73E-06	1.97E-07	0.00E+00	5.44E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.76E-04	1.57E-06	8.46E-06	1.01E-07	1.54E-05	1.85E-07	0.00E+00	1.06E-06	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.82E-03	2.51E-05	5.64E-04	6.76E-05	1.50E-03	1.80E-04	0.00E+00	2.11E-03	6.58E-02	1.60E-01	2.33E-01

Table C14: Estimated Non-carcinogen Total Risk to Human Receptors – Far Future – Application Case and Upper Bound Scenario (Updated)

Human	COPC	Far Future HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Upper Bound Scenario - Total Project Risk										
	Cobalt	9.79E-04	3.49E-06	5.91E-05	7.08E-07	6.77E-05	8.11E-07	0.00E+00	7.05E-04	2.47E-03	4.14E-02	4.57E-02
	Copper	3.32E-05	2.97E-07	1.93E-06	1.39E-07	2.75E-06	1.98E-07	0.00E+00	5.48E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	2.59E-04	2.31E-06	8.46E-06	1.01E-07	2.27E-05	2.72E-07	0.00E+00	1.55E-06	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.82E-03	2.51E-05	5.64E-04	6.76E-05	1.50E-03	1.80E-04	0.00E+00	2.11E-03	6.58E-02	1.60E-01	2.33E-01
Permanent Resident (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Application Case - Total Project Risk										
	Cobalt	2.10E-03	2.36E-05	9.07E-07	4.15E-07	2.48E-06	1.14E-06	0.00E+00	5.62E-03	1.44E-03	3.08E-02	4.00E-02
	Copper	7.53E-05	2.12E-06	2.96E-08	8.12E-08	1.07E-07	2.93E-07	0.00E+00	4.62E-03	5.39E-04	4.30E-02	4.82E-02
	Molybdenum	2.42E-03	6.80E-05	1.06E-07	4.87E-08	3.62E-06	1.66E-06	0.00E+00	5.39E-05	2.92E-04	7.16E-02	7.44E-02
	Uranium	2.46E-02	6.92E-04	1.25E-05	5.71E-05	2.24E-04	1.03E-03	0.00E+00	6.85E-02	5.55E-02	1.13E-01	2.63E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	2.76E-03	3.11E-05	9.07E-07	4.15E-07	3.26E-06	1.49E-06	0.00E+00	7.39E-03	1.44E-03	3.42E-02	4.58E-02
	Copper	9.85E-05	2.77E-06	2.96E-08	8.12E-08	1.40E-07	3.83E-07	0.00E+00	6.05E-03	5.39E-04	4.39E-02	5.06E-02
	Molybdenum	8.98E-03	2.53E-04	1.06E-07	4.87E-08	1.34E-05	6.15E-06	0.00E+00	2.00E-04	2.92E-04	7.67E-02	8.64E-02
	Uranium	2.46E-02	6.93E-04	1.25E-05	5.71E-05	2.25E-04	1.03E-03	0.00E+00	6.86E-02	5.55E-02	1.13E-01	2.63E-01
Permanent Resident One-year-old (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Application Case - Total Project Risk										
	Cobalt	2.34E-03	8.37E-06	5.92E-05	7.10E-07	1.62E-04	1.94E-06	0.00E+00	5.33E-03	2.85E-03	5.43E-02	6.50E-02
	Copper	8.41E-05	7.50E-07	1.93E-06	1.39E-07	6.97E-06	5.01E-07	0.00E+00	4.38E-03	1.06E-03	9.87E-02	1.04E-01
	Molybdenum	3.29E-03	2.93E-05	8.46E-06	1.01E-07	2.88E-04	3.45E-06	0.00E+00	6.23E-05	7.01E-04	2.66E-01	2.70E-01
	Uranium	2.75E-02	2.45E-04	8.15E-04	9.76E-05	1.47E-02	1.76E-03	0.00E+00	6.50E-02	1.09E-01	1.93E-01	4.12E-01
		Upper Bound Scenario - Total Project Risk										
	Cobalt	3.08E-03	1.10E-05	5.92E-05	7.10E-07	2.13E-04	2.56E-06	0.00E+00	7.01E-03	2.85E-03	5.77E-02	7.09E-02
	Copper	1.10E-04	9.82E-07	1.93E-06	1.39E-07	9.12E-06	6.56E-07	0.00E+00	5.73E-03	1.06E-03	9.95E-02	1.06E-01
	Molybdenum	1.22E-02	1.09E-04	8.46E-06	1.01E-07	1.07E-03	1.28E-05	0.00E+00	2.31E-04	7.01E-04	2.72E-01	2.86E-01
	Uranium	2.75E-02	2.45E-04	8.15E-04	9.76E-05	1.47E-02	1.76E-03	0.00E+00	6.50E-02	1.09E-01	1.93E-01	4.12E-01

Note: Underlined values indicate exceedance of the HQ of 0.2 for a given exposure pathway; **Bolded values** indicate exceedance of the HQ of 1 for all exposure pathways.
HQ = hazard quotient; COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Table C15: Estimated Non-carcinogen Total Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

Human	COPC	RFD Case HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Camp Worker (Patterson Lake North Arm - West Basin)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-06	1.01E-06	4.64E-06	0.00E+00	1.15E-03	7.21E-04	1.97E-02	2.25E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-07	4.12E-08	1.13E-06	0.00E+00	8.94E-04	2.69E-04	3.89E-02	4.01E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-07	1.62E-07	7.43E-07	0.00E+00	1.21E-06	1.46E-04	8.23E-02	8.25E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-04	2.24E-05	1.03E-03	0.00E+00	3.43E-03	1.92E-02	7.29E-02	9.95E-02
		Project Lifespan - Total Project Risk										
	Cobalt	8.63E-04	9.71E-06	9.06E-07	4.15E-06	1.02E-06	4.66E-06	0.00E+00	1.33E-03	7.29E-04	2.01E-02	2.30E-02
	Copper	2.91E-05	8.19E-07	3.00E-08	8.23E-07	4.12E-08	1.13E-06	0.00E+00	9.80E-04	2.70E-04	3.91E-02	4.03E-02
	Molybdenum	1.09E-04	3.05E-06	1.08E-07	4.96E-07	1.62E-07	7.43E-07	0.00E+00	2.19E-06	1.49E-04	8.24E-02	8.26E-02
	Uranium	2.46E-03	6.92E-05	2.80E-05	1.28E-03	2.24E-05	1.03E-03	0.00E+00	1.06E-02	4.34E-02	8.81E-02	1.47E-01
		Far Future - Total Project Risk										
	Cobalt	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Copper	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Molybdenum	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Uranium	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subsistence Harvester (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Project Lifespan - Total Project Risk										
	Cobalt	1.00E-03	1.13E-05	9.05E-07	4.14E-07	1.12E-06	5.14E-07	0.00E+00	2.65E-03	1.46E-03	2.51E-02	3.02E-02
	Copper	3.20E-05	8.99E-07	2.95E-08	8.11E-08	4.37E-08	1.20E-07	0.00E+00	1.96E-03	5.39E-04	4.15E-02	4.40E-02
	Molybdenum	2.04E-04	5.75E-06	1.07E-07	4.88E-08	2.54E-07	1.16E-07	0.00E+00	4.38E-06	2.98E-04	6.99E-02	7.05E-02
	Uranium	7.81E-03	2.20E-04	1.16E-05	5.30E-05	3.71E-05	1.70E-04	0.00E+00	2.12E-02	8.67E-02	1.12E-01	2.29E-01
		Far Future - Total Project Risk										
	Cobalt	1.23E-03	1.39E-05	9.05E-07	4.14E-07	1.46E-06	6.68E-07	0.00E+00	3.30E-03	1.44E-03	2.73E-02	3.33E-02
	Copper	4.27E-05	1.20E-06	2.95E-08	8.10E-08	6.04E-08	1.66E-07	0.00E+00	2.62E-03	5.38E-04	4.19E-02	4.51E-02
	Molybdenum	7.79E-04	2.19E-05	1.06E-07	4.87E-08	1.17E-06	5.34E-07	0.00E+00	1.74E-05	2.92E-04	7.05E-02	7.16E-02
	Uranium	5.52E-03	1.55E-04	8.93E-06	4.09E-05	5.04E-05	2.31E-04	0.00E+00	1.54E-02	3.98E-02	8.64E-02	1.48E-01
Subsistence Harvester One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Total Project Risk										
	Cobalt	1.12E-03	4.00E-06	5.91E-05	7.09E-07	7.34E-05	8.80E-07	0.00E+00	2.52E-03	2.86E-03	4.85E-02	5.51E-02
	Copper	3.57E-05	3.19E-07	1.93E-06	1.39E-07	2.86E-06	2.05E-07	0.00E+00	1.86E-03	1.06E-03	9.73E-02	1.00E-01
	Molybdenum	2.78E-04	2.48E-06	8.47E-06	1.02E-07	2.02E-05	2.42E-07	0.00E+00	5.06E-06	7.11E-04	2.64E-01	2.65E-01
	Uranium	8.72E-03	7.78E-05	7.56E-04	9.06E-05	2.43E-03	2.91E-04	0.00E+00	2.01E-02	1.48E-01	1.92E-01	3.73E-01

Table C15: Estimated Non-carcinogen Total Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

Human	COPC	RFD Case HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Far Future - Total Project Risk										
	Cobalt	1.38E-03	4.92E-06	5.91E-05	7.08E-07	9.54E-05	1.14E-06	0.00E+00	3.13E-03	2.84E-03	5.08E-02	5.83E-02
	Copper	4.76E-05	4.25E-07	1.93E-06	1.39E-07	3.95E-06	2.84E-07	0.00E+00	2.48E-03	1.06E-03	9.77E-02	1.01E-01
	Molybdenum	1.06E-03	9.45E-06	8.46E-06	1.01E-07	9.27E-05	1.11E-06	0.00E+00	2.00E-05	7.01E-04	2.64E-01	2.66E-01
	Uranium	6.17E-03	5.51E-05	5.84E-04	7.00E-05	3.29E-03	3.94E-04	0.00E+00	1.46E-02	7.84E-02	1.74E-01	2.77E-01
Subsistence Harvester (Beet Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Project Lifespan - Total Project Risk										
	Cobalt	9.22E-04	1.04E-05	9.05E-07	4.14E-07	1.07E-06	4.91E-07	0.00E+00	2.45E-03	1.46E-03	2.47E-02	2.96E-02
	Copper	3.03E-05	8.53E-07	2.95E-08	8.11E-08	4.25E-08	1.17E-07	0.00E+00	1.86E-03	5.39E-04	4.12E-02	4.37E-02
	Molybdenum	1.51E-04	4.25E-06	1.07E-07	4.88E-08	2.10E-07	9.61E-08	0.00E+00	3.30E-06	2.98E-04	6.98E-02	7.03E-02
	Uranium	4.32E-03	1.21E-04	1.03E-05	4.70E-05	2.79E-05	1.28E-04	0.00E+00	1.18E-02	6.54E-02	9.34E-02	1.75E-01
		Far Future - Total Project Risk										
	Cobalt	1.06E-03	1.19E-05	9.05E-07	4.14E-07	1.25E-06	5.72E-07	0.00E+00	2.83E-03	1.44E-03	2.54E-02	3.08E-02
	Copper	3.62E-05	1.02E-06	2.95E-08	8.10E-08	5.13E-08	1.41E-07	0.00E+00	2.22E-03	5.38E-04	4.15E-02	4.43E-02
	Molybdenum	4.57E-04	1.29E-05	1.06E-07	4.87E-08	6.85E-07	3.13E-07	0.00E+00	1.02E-05	2.92E-04	7.00E-02	7.08E-02
	Uranium	3.60E-03	1.01E-04	8.80E-06	4.03E-05	3.28E-05	1.50E-04	0.00E+00	1.00E-02	3.92E-02	8.35E-02	1.37E-01
Subsistence Harvester One-year-old (Beet Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Total Project Risk										
	Cobalt	1.03E-03	3.68E-06	5.91E-05	7.09E-07	7.01E-05	8.40E-07	0.00E+00	2.33E-03	2.86E-03	4.81E-02	5.45E-02
	Copper	3.39E-05	3.02E-07	1.93E-06	1.39E-07	2.78E-06	2.00E-07	0.00E+00	1.76E-03	1.06E-03	9.71E-02	9.99E-02
	Molybdenum	2.06E-04	1.83E-06	8.47E-06	1.02E-07	1.67E-05	2.00E-07	0.00E+00	3.80E-06	7.11E-04	2.64E-01	2.65E-01
	Uranium	4.82E-03	4.30E-05	6.71E-04	8.04E-05	1.82E-03	2.18E-04	0.00E+00	1.12E-02	1.16E-01	1.78E-01	3.14E-01
		Far Future - Total Project Risk										
	Cobalt	1.18E-03	4.21E-06	5.91E-05	7.08E-07	8.17E-05	9.79E-07	0.00E+00	2.68E-03	2.84E-03	4.89E-02	5.57E-02
	Copper	4.04E-05	3.61E-07	1.93E-06	1.39E-07	3.35E-06	2.41E-07	0.00E+00	2.11E-03	1.06E-03	9.73E-02	1.00E-01
	Molybdenum	6.22E-04	5.55E-06	8.46E-06	1.01E-07	5.45E-05	6.53E-07	0.00E+00	1.18E-05	7.01E-04	2.64E-01	2.65E-01
	Uranium	4.02E-03	3.59E-05	5.75E-04	6.89E-05	2.14E-03	2.57E-04	0.00E+00	9.50E-03	7.72E-02	1.71E-01	2.65E-01
Subsistence Harvester (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01

Table C15: Estimated Non-carcinogen Total Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

Human	COPC	RFD Case HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Project Lifespan - Total Project Risk										
	Cobalt	8.64E-04	9.72E-06	9.05E-07	4.14E-07	1.02E-06	4.67E-07	0.00E+00	2.31E-03	1.46E-03	2.45E-02	2.91E-02
	Copper	2.92E-05	8.22E-07	2.95E-08	8.11E-08	4.14E-08	1.14E-07	0.00E+00	1.79E-03	5.39E-04	4.12E-02	4.36E-02
	Molybdenum	1.13E-04	3.17E-06	1.07E-07	4.88E-08	1.67E-07	7.65E-08	0.00E+00	2.51E-06	2.98E-04	6.98E-02	7.02E-02
	Uranium	2.63E-03	7.40E-05	8.64E-06	3.96E-05	2.29E-05	1.05E-04	0.00E+00	7.31E-03	3.87E-02	8.22E-02	1.31E-01
		Far Future - Total Project Risk										
	Cobalt	8.78E-04	9.88E-06	9.05E-07	4.14E-07	1.04E-06	4.75E-07	0.00E+00	2.35E-03	1.44E-03	2.45E-02	2.92E-02
	Copper	2.98E-05	8.39E-07	2.95E-08	8.10E-08	4.22E-08	1.16E-07	0.00E+00	1.83E-03	5.38E-04	4.12E-02	4.36E-02
	Molybdenum	1.44E-04	4.05E-06	1.06E-07	4.87E-08	2.15E-07	9.86E-08	0.00E+00	3.21E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.56E-03	7.21E-05	8.63E-06	3.95E-05	2.34E-05	1.07E-04	0.00E+00	7.14E-03	3.84E-02	8.21E-02	1.30E-01
Subsistence Harvester One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Project Lifespan - Total Project Risk										
	Cobalt	9.65E-04	3.45E-06	5.91E-05	7.09E-07	6.66E-05	7.99E-07	0.00E+00	2.19E-03	2.86E-03	4.79E-02	5.40E-02
	Copper	3.26E-05	2.91E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	1.70E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.53E-04	1.37E-06	8.47E-06	1.02E-07	1.33E-05	1.59E-07	0.00E+00	2.89E-06	7.11E-04	2.64E-01	2.64E-01
	Uranium	2.94E-03	2.62E-05	5.65E-04	6.77E-05	1.50E-03	1.80E-04	0.00E+00	6.93E-03	7.61E-02	1.70E-01	2.59E-01
		Far Future - Total Project Risk										
	Cobalt	9.80E-04	3.50E-06	5.91E-05	7.08E-07	6.78E-05	8.13E-07	0.00E+00	2.23E-03	2.84E-03	4.79E-02	5.41E-02
	Copper	3.33E-05	2.97E-07	1.93E-06	1.39E-07	2.76E-06	1.98E-07	0.00E+00	1.74E-03	1.06E-03	9.70E-02	9.99E-02
	Molybdenum	1.96E-04	1.75E-06	8.46E-06	1.01E-07	1.71E-05	2.05E-07	0.00E+00	3.71E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.86E-03	2.55E-05	5.64E-04	6.75E-05	1.53E-03	1.83E-04	0.00E+00	6.77E-03	7.57E-02	1.70E-01	2.58E-01
Seasonal Resident (Patterson Lake South Arm)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Project Lifespan - Total Project Risk										
	Cobalt	9.45E-04	1.06E-05	9.05E-07	4.14E-07	1.08E-06	4.94E-07	0.00E+00	7.96E-04	1.13E-03	1.89E-02	2.18E-02
	Copper	3.08E-05	8.67E-07	2.95E-08	8.11E-08	4.27E-08	1.17E-07	0.00E+00	5.99E-04	4.22E-04	3.87E-02	3.97E-02
	Molybdenum	1.66E-04	4.67E-06	1.06E-07	4.87E-08	2.17E-07	9.95E-08	0.00E+00	1.14E-06	2.31E-04	8.60E-02	8.65E-02
	Uranium	5.67E-03	1.59E-04	1.04E-05	4.76E-05	3.13E-05	1.43E-04	0.00E+00	4.90E-03	4.52E-02	7.36E-02	1.30E-01
		Far Future - Total Project Risk										
	Cobalt	1.08E-03	1.22E-05	9.04E-07	4.14E-07	1.28E-06	5.86E-07	0.00E+00	9.19E-04	1.13E-03	1.95E-02	2.26E-02
	Copper	3.72E-05	1.05E-06	2.95E-08	8.10E-08	5.27E-08	1.45E-07	0.00E+00	7.24E-04	4.22E-04	3.88E-02	4.00E-02
	Molybdenum	5.11E-04	1.44E-05	1.06E-07	4.87E-08	7.64E-07	3.50E-07	0.00E+00	3.61E-06	2.29E-04	8.62E-02	8.69E-02
	Uranium	4.30E-03	1.21E-04	8.81E-06	4.03E-05	3.92E-05	1.79E-04	0.00E+00	3.79E-03	3.08E-02	6.90E-02	1.08E-01

Table C15: Estimated Non-carcinogen Total Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

Human	COPC	RFD Case HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
Seasonal Resident One-year-old (Patterson Lake South Arm)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Project Lifespan - Total Project Risk										
	Cobalt	1.06E-03	3.77E-06	5.91E-05	7.08E-07	7.06E-05	8.46E-07	0.00E+00	7.54E-04	2.48E-03	4.15E-02	4.59E-02
	Copper	3.44E-05	3.07E-07	1.93E-06	1.39E-07	2.79E-06	2.01E-07	0.00E+00	5.68E-04	9.23E-04	9.32E-02	9.48E-02
	Molybdenum	2.26E-04	2.01E-06	8.47E-06	1.02E-07	1.73E-05	2.07E-07	0.00E+00	1.32E-06	6.13E-04	2.77E-01	2.78E-01
	Uranium	6.33E-03	5.65E-05	6.79E-04	8.14E-05	2.04E-03	2.45E-04	0.00E+00	4.64E-03	9.28E-02	1.65E-01	2.71E-01
		Far Future - Total Project Risk										
	Cobalt	1.21E-03	4.32E-06	5.91E-05	7.08E-07	8.37E-05	1.00E-06	0.00E+00	8.71E-04	2.47E-03	4.21E-02	4.68E-02
	Copper	4.16E-05	3.71E-07	1.93E-06	1.39E-07	3.45E-06	2.48E-07	0.00E+00	6.86E-04	9.22E-04	9.33E-02	9.50E-02
	Molybdenum	6.94E-04	6.20E-06	8.46E-06	1.01E-07	6.08E-05	7.28E-07	0.00E+00	4.16E-06	6.10E-04	2.78E-01	2.79E-01
	Uranium	4.80E-03	4.28E-05	5.76E-04	6.90E-05	2.56E-03	3.07E-04	0.00E+00	3.60E-03	6.72E-02	1.61E-01	2.40E-01
Seasonal Resident (Lloyd Lake)		Base Case										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	7.27E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	5.66E-04	4.22E-04	3.86E-02	3.96E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	7.66E-07	2.29E-04	8.60E-02	8.63E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	2.17E-03	3.01E-02	6.79E-02	1.03E-01
		Project Lifespan - Total Project Risk										
	Cobalt	8.62E-04	9.69E-06	9.05E-07	4.14E-07	1.02E-06	4.66E-07	0.00E+00	7.33E-04	1.13E-03	1.88E-02	2.15E-02
	Copper	2.92E-05	8.21E-07	2.95E-08	8.11E-08	4.13E-08	1.13E-07	0.00E+00	7.54E-04	4.22E-04	3.86E-02	3.98E-02
	Molybdenum	1.11E-04	3.12E-06	1.06E-07	4.87E-08	1.65E-07	7.56E-08	0.00E+00	7.95E-07	2.31E-04	8.60E-02	8.64E-02
	Uranium	2.56E-03	7.21E-05	8.64E-06	3.95E-05	2.27E-05	1.04E-04	0.00E+00	2.88E-03	3.02E-02	6.80E-02	1.04E-01
		Far Future - Total Project Risk										
	Cobalt	8.70E-04	9.79E-06	9.04E-07	4.14E-07	1.03E-06	4.71E-07	0.00E+00	7.45E-04	1.13E-03	1.88E-02	2.16E-02
	Copper	2.95E-05	8.31E-07	2.95E-08	8.10E-08	4.18E-08	1.15E-07	0.00E+00	7.70E-04	4.22E-04	3.86E-02	3.99E-02
	Molybdenum	1.30E-04	3.65E-06	1.06E-07	4.87E-08	1.94E-07	8.89E-08	0.00E+00	1.02E-06	2.29E-04	8.60E-02	8.64E-02
	Uranium	2.52E-03	7.09E-05	8.63E-06	3.95E-05	2.30E-05	1.05E-04	0.00E+00	2.81E-03	3.01E-02	6.80E-02	1.04E-01
Seasonal Resident One-year-old (Lloyd Lake)		Base Case										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	6.89E-04	2.47E-03	4.13E-02	4.56E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	5.36E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	8.84E-07	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	2.06E-03	6.58E-02	1.60E-01	2.33E-01
		Project Lifespan - Total Project Risk										
	Cobalt	9.62E-04	3.43E-06	5.91E-05	7.08E-07	6.65E-05	7.97E-07	0.00E+00	6.92E-04	2.48E-03	4.14E-02	4.56E-02
	Copper	3.26E-05	2.91E-07	1.93E-06	1.39E-07	2.70E-06	1.94E-07	0.00E+00	5.38E-04	9.23E-04	9.32E-02	9.47E-02
	Molybdenum	1.51E-04	1.35E-06	8.47E-06	1.02E-07	1.31E-05	1.57E-07	0.00E+00	9.03E-07	6.13E-04	2.77E-01	2.78E-01
	Uranium	2.86E-03	2.55E-05	5.64E-04	6.76E-05	1.49E-03	1.78E-04	0.00E+00	2.14E-03	6.60E-02	1.60E-01	2.34E-01

Table C15: Estimated Non-carcinogen Total Risk to Human Receptors – Operations – Reasonably Foreseeable Development Case (Updated)

Human	COPC	RFD Case HQs										
		Water (Internal)	Water (External)	Soil (Internal)	Soil (External)	Sediment (internal)	Sediment (External)	Aquatic Plants	Aquatic Animals	Terrestrial Plants	Terrestrial Animals	Total by COPC
		Far Future - Total Project Risk										
	Cobalt	9.71E-04	3.47E-06	5.91E-05	7.08E-07	6.72E-05	8.05E-07	0.00E+00	6.99E-04	2.47E-03	4.14E-02	4.56E-02
	Copper	3.30E-05	2.94E-07	1.93E-06	1.39E-07	2.73E-06	1.97E-07	0.00E+00	5.44E-04	9.22E-04	9.32E-02	9.47E-02
	Molybdenum	1.76E-04	1.57E-06	8.46E-06	1.01E-07	1.54E-05	1.85E-07	0.00E+00	1.06E-06	6.10E-04	2.77E-01	2.78E-01
	Uranium	2.82E-03	2.51E-05	5.64E-04	6.75E-05	1.50E-03	1.80E-04	0.00E+00	2.11E-03	6.58E-02	1.60E-01	2.33E-01
Permanent Resident (Patterson Lake North Arm - West Basin)		Base Case Adult										
	Cobalt	8.58E-04	9.65E-06	9.04E-07	4.14E-07	1.01E-06	4.64E-07	0.00E+00	2.30E-03	1.44E-03	2.44E-02	2.90E-02
	Copper	2.91E-05	8.18E-07	2.95E-08	8.10E-08	4.12E-08	1.13E-07	0.00E+00	1.79E-03	5.38E-04	4.12E-02	4.35E-02
	Molybdenum	1.08E-04	3.05E-06	1.06E-07	4.87E-08	1.62E-07	7.43E-08	0.00E+00	2.42E-06	2.92E-04	6.98E-02	7.02E-02
	Uranium	2.46E-03	6.92E-05	8.62E-06	3.95E-05	2.24E-05	1.03E-04	0.00E+00	6.85E-03	3.84E-02	8.20E-02	1.30E-01
		Base Case One-year-old										
	Cobalt	9.58E-04	3.42E-06	5.91E-05	7.08E-07	6.62E-05	7.94E-07	0.00E+00	2.18E-03	2.84E-03	4.78E-02	5.39E-02
	Copper	3.25E-05	2.90E-07	1.93E-06	1.39E-07	2.69E-06	1.94E-07	0.00E+00	1.69E-03	1.06E-03	9.70E-02	9.98E-02
	Molybdenum	1.47E-04	1.32E-06	8.46E-06	1.01E-07	1.29E-05	1.55E-07	0.00E+00	2.79E-06	7.01E-04	2.64E-01	2.64E-01
	Uranium	2.75E-03	2.45E-05	5.64E-04	6.75E-05	1.47E-03	1.76E-04	0.00E+00	6.49E-03	7.57E-02	1.70E-01	2.58E-01
		Far future Adult - Total Project Risk										
	Cobalt	2.10E-03	2.36E-05	9.05E-07	4.14E-07	2.48E-06	1.14E-06	0.00E+00	5.62E-03	1.44E-03	3.08E-02	4.00E-02
	Copper	7.53E-05	2.12E-06	2.96E-08	8.12E-08	1.07E-07	2.93E-07	0.00E+00	4.62E-03	5.39E-04	4.30E-02	4.82E-02
	Molybdenum	2.42E-03	6.80E-05	1.06E-07	4.87E-08	3.62E-06	1.66E-06	0.00E+00	5.39E-05	2.92E-04	7.16E-02	7.44E-02
	Uranium	2.46E-02	6.92E-04	1.25E-05	5.72E-05	2.24E-04	1.03E-03	0.00E+00	6.85E-02	5.57E-02	1.13E-01	2.64E-01
		Far future One-year-old - Total Project Risk										
	Cobalt	2.34E-03	8.37E-06	5.92E-05	7.09E-07	1.62E-04	1.94E-06	0.00E+00	5.33E-03	2.84E-03	5.43E-02	6.50E-02
	Copper	8.41E-05	7.50E-07	1.93E-06	1.39E-07	6.97E-06	5.01E-07	0.00E+00	4.38E-03	1.06E-03	9.87E-02	1.04E-01
	Molybdenum	3.29E-03	2.93E-05	8.46E-06	1.01E-07	2.88E-04	3.45E-06	0.00E+00	6.23E-05	7.01E-04	2.66E-01	2.70E-01
	Uranium	2.75E-02	2.45E-04	8.17E-04	9.79E-05	1.47E-02	1.76E-03	0.00E+00	6.50E-02	1.10E-01	1.93E-01	4.13E-01

Note: Underlined values indicate exceedance of the HQ of 0.2 for a given exposure pathway; **Bolded values** indicate exceedance of the HQ of 1 for all exposure pathways.
HQ = hazard quotient; COPC = constituent of potential concern; n/a = receptor not assessed in that phase.

Appendix 2

Table C.23: Sample Calculation - Adult Subsistence Harvester (Patterson Lake South) Dose and Risk Calculations for Copper (Updated)

Parameter	Symbol	Calculation	Copper		
			Value	Unit	Source
Water Ingestion Dose					
Water Concentration (PLS)	$C_{w\ (PLS)}$	-	9.23E-04	mg/L	Appendix C, Table C.1
Water Concentration (Reference)	$C_{w\ (Ref)}$	-	8.43E-04	mg/L	Appendix C, Table C.1
Local Intake Fraction of Water (PLS)	$IF_{w\ (PLS)}$	-	5.00E-01	Unitless	Table 2-12, IMPACT Model Report
Local Intake Fraction of Water (Reference)	$IF_{w\ (Ref)}$	-	5.00E-01	Unitless	Table 2-12, IMPACT Model Report
Water Intake	IR_w	-	1.04E+00	L/d	CSA N288.1-20 (Table 21)
Human Adult Body Mass	BW	-	7.07E+01	kg	Health Canada, 2021
Ingestion Dose (Water)	D_w	$D_w = ((C_{w\ (PLS)} * IF_{w\ (PLS)} + C_{w\ (Ref)} * IF_{w\ (Ref)}) * IR_w) / BW$	1.30E-05	mg/kg/d fw	Calculated
Soil Ingestion Dose					
Soil Concentration (PLS)	$C_{s\ (PLS)}$	-	6.03E-01	mg/kg dw	Appendix C, Table C.1
Soil Concentration (Reference)	$C_{s\ (Ref)}$	-	6.01E-01	mg/kg dw	Appendix C, Table C.1
Local Intake Fraction of Soil (PLS)	$IF_{s\ (PLS)}$	-	5.00E-01	Unitless	Table 2-12, IMPACT Model Report
Local Intake Fraction of Soil (Reference)	$IF_{s\ (Ref)}$	-	5.00E-01	Unitless	Table 2-12, IMPACT Model Report
Soil Intake	IR_s	-	4.00E-06	kg dw/d	Table 2-7, IMPACT Model Report
Days Exposed to Soil per Year	Exp_{days}	-	1.35E+02	d/y	Assumed
Human Adult Body Mass	BW	-	7.07E+01	kg	Health Canada, 2021
Ingestion Dose (Soil)	D_s	$D_s = (((C_{s\ (PLS)} * IF_{s\ (PLS)} + C_{s\ (Ref)} * IF_{s\ (Ref)}) * IR_s) / BW) * (Exp_{days} / 365)$	1.26E-08	mg/kg/d fw	Calculated
Terrestrial Plant Ingestion Dose					
Labrador Tea Concentration (PLS)	$C_{LT\ (PLS)}$	-	8.09E-01	mg/kg fw	Appendix C, Table C.7
Blueberry Concentration (PLS)	$C_{BB\ (PLS)}$	-	4.01E-01	mg/kg fw	Appendix C, Table C.7
Labrador Tea Concentration (Reference)	$C_{LT\ (Ref)}$	-	7.98E-01	mg/kg fw	Appendix C, Table C.7
Blueberry Concentration (Reference)	$C_{BB\ (Ref)}$	-	3.99E-01	mg/kg fw	Appendix C, Table C.7
Food Intake (Terrestrial Plants)	IR_{TP}	-	1.24E+01	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Labrador Tea (Reference)	$IF_{LT\ (Ref)}$	-	9.88E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Blueberry (Reference)	$IF_{BB\ (Ref)}$	-	4.01E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Labrador Tea (PLS)	$IF_{LT\ (PLS)}$	-	9.88E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Blueberry (PLS)	$IF_{BB\ (PLS)}$	-	4.01E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	7.07E+01	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	Unitless	Assumed
Ingestion Dose (Terrestrial Plants)	D_{TP}	$D_{TP} = ((C_{LT\ (PLS)} * IF_{LT\ (PLS)} + C_{BB\ (PLS)} * IF_{BB\ (PLS)} + C_{LT\ (Ref)} * IF_{LT\ (Ref)} + C_{BB\ (Ref)} * IF_{BB\ (Ref)}) * IR_{TP} * FPF) / (BW * 365)$	2.30E-04	mg/kg/d fw	Calculated
Aquatic Animal Ingestion Dose					
Northern Pike Concentration (PLS)	$C_{NP\ (PLS)}$	-	4.61E-01	mg/kg fw	Appendix C, Table C.7
Whitefish Concentration (PLS)	$C_{WF\ (PLS)}$	-	4.59E-02	mg/kg fw	Appendix C, Table C.7
Northern Pike Concentration (Reference)	$C_{NP\ (Ref)}$	-	4.21E-01	mg/kg fw	Appendix C, Table C.7
Whitefish Concentration (Reference)	$C_{WF\ (Ref)}$	-	4.21E-02	mg/kg fw	Appendix C, Table C.7
Food Intake (Aquatic Animals)	IR_{AA}	-	8.47E+01	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Northern Pike (Reference)	$IF_{NP\ (Ref)}$	-	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Whitefish (Reference)	$IF_{WF\ (Ref)}$	-	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Northern Pike (PLS)	$IF_{NP\ (PLS)}$	-	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Whitefish (PLS)	$IF_{WF\ (PLS)}$	-	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	7.07E+01	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	Unitless	Assumed
Ingestion Dose (Aquatic Animals)	D_{AA}	$D_{AA} = ((C_{NP\ (PLS)} * IF_{NP\ (PLS)} + C_{WF\ (PLS)} * IF_{WF\ (PLS)} + C_{NP\ (Ref)} * IF_{NP\ (Ref)} + C_{WF\ (Ref)} * IF_{WF\ (Ref))} * IR_{AA} * FPF) / (BW * 365)$	7.97E-04	mg/kg/d fw	Calculated

Table C.23: Sample Calculation - Adult Subsistence Harvester (Patterson Lake South) Dose and Risk Calculations for Copper (Updated)

Parameter	Symbol	Calculation	Copper		
			Value	Unit	Source
Terrestrial Animal Ingestion Dose					
Moose Concentration (PLS)	$C_{M\ (PLS)}$	-	3.65E-01	mg/kg fw	Appendix C, Table C.7
Moose Organs Concentration (PLS)	$C_{MO\ (PLS)}$	-	1.46E+01	mg/kg fw	Appendix C, Table C.7
Beaver Concentration (PLS)	$C_{B\ (PLS)}$	-	3.81E-01	mg/kg fw	Appendix C, Table C.7
Mallard Concentration (PLS)	$C_{Mal\ (PLS)}$	-	1.23E+00	mg/kg fw	Appendix C, Table C.7
Grouse Concentration (PLS)	$C_{G\ (PLS)}$	-	2.61E-01	mg/kg fw	Appendix C, Table C.7
Store Food Concentration (PLS)	$C_{SF\ (PLS)}$	-	5.70E-01	mg/kg fw	Appendix C, Table C.7
Moose Concentration (Reference)	$C_{M\ (Ref)}$	-	3.51E-01	mg/kg fw	Appendix C, Table C.7
Moose Organs Concentration (Reference)	$C_{MO\ (Ref)}$	-	1.40E+01	mg/kg fw	Appendix C, Table C.7
Beaver Concentration (Reference)	$C_{B\ (Ref)}$	-	3.78E-01	mg/kg fw	Appendix C, Table C.7
Mallard Concentration (Reference)	$C_{Mal\ (Ref)}$	-	1.13E+00	mg/kg fw	Appendix C, Table C.7
Grouse Concentration (Reference)	$C_{G\ (Ref)}$	-	2.59E-01	mg/kg fw	Appendix C, Table C.7
Store Food Concentration (Reference)	$C_{SF\ (Ref)}$	-	5.70E-01	mg/kg fw	Appendix C, Table C.7
Food Intake (Terrestrial Animals)	IR_{TA}	-	6.09E+02	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Moose (PLS)	$IF_{M\ (PLS)}$	-	1.69E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Moose Organs (PLS)	$IF_{MO\ (PLS)}$	-	7.52E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Beaver (PLS)	$IF_{B\ (PLS)}$	-	4.68E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Mallard (PLS)	$IF_{Mal\ (PLS)}$	-	2.84E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Grouse (PLS)	$IF_{G\ (PLS)}$	-	1.01E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Store Food (PLS)	$IF_{SF\ (PLS)}$	-	4.16E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Moose (Reference)	$IF_{M\ (Ref)}$	-	1.69E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Moose Organs (Reference)	$IF_{MO\ (Ref)}$	-	7.52E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Beaver (Reference)	$IF_{B\ (Ref)}$	-	4.68E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Mallard (Reference)	$IF_{Mal\ (Ref)}$	-	2.84E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Grouse (Reference)	$IF_{G\ (Ref)}$	-	1.01E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Store Food (Reference)	$IF_{SF\ (Ref)}$	-	4.16E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	7.07E+01	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	Unitless	Assumed
Ingestion Dose (Terrestrial Animals)	D_{TA}	$D_{AA} = ((C_{M\ (PLS)} * IF_{M\ (PLS)} + C_{MO\ (PLS)} * IF_{MO\ (PLS)} + C_{B\ (PLS)} * IF_{B\ (PLS)} + C_{Mal\ (PLS)} * IF_{Mal\ (PLS)} + C_{G\ (PLS)} * IF_{G\ (PLS)} + C_{SF\ (PLS)} * IF_{SF\ (PLS)} + C_{M\ (Ref)} * IF_{M\ (Ref)} + C_{MO\ (Ref)} * IF_{MO\ (Ref)} + C_{B\ (Ref)} * IF_{B\ (Ref)} + C_{Mal\ (Ref)} * IF_{Mal\ (Ref)} + C_{G\ (Ref)} * IF_{G\ (Ref)} + C_{SF\ (Ref)} * IF_{SF\ (Ref)}) * IR_{TA} * FPF) / (BW * 365)$	1.77E-02	mg/kg/d fw	Calculated
Adult Subsistence Harvester Total Dose and HQ					
Total Ingestion Dose	D_{total}	$D_{total} = D_w + D_s + D_{TP} + D_{AA} + D_{TA}$	1.87E-02	mg/kg/d fw	Calculated
Toxicological Benchmark	TRV	-	4.26E-01	mg/kg d	Table 5-17
Hazard Quotient	HQ	$HQ = D_{total} / TRV$	4.39E-02	Unitless	Calculated

Appendix 3

Table C.26: Sample Calculation - Composite Subsistence Harvester (Patterson Lake South) Dose and Cancer Risk Calculations for Arsenic (NEW)

Parameter	Symbol	Calculation	Arsenic					
			1 yr Old[a]	Child	Teen	Adult	Unit	Source
Terrestrial Plant Ingestion Dose								
Labrador Tea Concentration (PLS)	$C_{LT\ (PLS)}$	-	5.28E-02	5.28E-02	5.28E-02	5.28E-02	mg/kg fw	Appendix C, Table C.7
Blueberry Concentration (PLS)	$C_{BB\ (PLS)}$	-	2.52E-02	2.52E-02	2.52E-02	2.52E-02	mg/kg fw	Appendix C, Table C.7
Labrador Tea Concentration (Reference)	$C_{LT\ (Ref)}$	-	5.02E-02	5.02E-02	5.02E-02	5.02E-02	mg/kg fw	Appendix C, Table C.7
Blueberry Concentration (Reference)	$C_{BB\ (Ref)}$	-	2.51E-02	2.51E-02	2.51E-02	2.51E-02	mg/kg fw	Appendix C, Table C.7
Food Intake (Terrestrial Plants)	IR_{TP}	-	6.15E+00	1.10E+01	8.02E+00	1.24E+01	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Labrador Tea (Reference)	$IF_{LT\ (Ref)}$	-	5.54E-02	9.59E-02	1.54E-01	9.88E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Blueberry (Reference)	$IF_{BB\ (Ref)}$	-	4.45E-01	4.04E-01	3.46E-01	4.01E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Labrador Tea (PLS)	$IF_{LT\ (PLS)}$	-	5.54E-02	9.59E-02	1.54E-01	9.88E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Blueberry (PLS)	$IF_{BB\ (PLS)}$	-	4.45E-01	4.04E-01	3.46E-01	4.01E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	16.5	32.9	59.7	70.7	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	1.00E+00	1.00E+00	1.00E+00	Unitless	Assumed
Ingestion Dose (Background) (Terrestrial Plants)[b]	$D_{TP}Ref$	$D_{TPRef} = ((C_{LT\ (Ref)} * IF_{LT\ (Ref)} *2 + C_{BB\ (Ref)} * IF_{BB\ (Ref)} *2) * IR_{TP} * FPF) / (BW * 365)$	2.84E-05	2.74E-05	1.21E-05	1.44E-05	mg/kg/d fw	Calculated
Ingestion Dose (Total) (Terrestrial Plants)	$D_{TP}Total$	$D_{TPTotal} = ((C_{LT\ (PLS)} * IF_{LT\ (PLS)} + C_{BB\ (PLS)} * IF_{BB\ (PLS)} + C_{LT\ (Ref)} * IF_{LT\ (Ref)} + C_{BB\ (Ref)} * IF_{BB\ (Ref)}) * IR_{TP} * FPF) / (BW * 365)$	2.86E-05	2.76E-05	1.22E-05	1.46E-05	mg/kg/d fw	Calculated
Ingestion Dose (Incremental) (Terrestrial Plants)	$D_{TP}Incr$	$D_{TP}Incr = D_{TP}Total - D_{TP}Ref$	1.88E-07	2.61E-07	1.58E-07	1.40E-07	mg/kg/d fw	Calculated
Aquatic Animal Ingestion Dose								
Northern Pike Concentration (PLS)	$C_{NP\ (PLS)}$	-	4.49E-02	4.49E-02	4.49E-02	4.49E-02	mg/kg fw	Appendix C, Table C.7
Whitefish Concentration (PLS)	$C_{WF\ (PLS)}$	-	4.27E-02	4.27E-02	4.27E-02	4.27E-02	mg/kg fw	Appendix C, Table C.7
Northern Pike Concentration (Reference)	$C_{NP\ (Ref)}$	-	3.71E-02	3.71E-02	3.71E-02	3.71E-02	mg/kg fw	Appendix C, Table C.7
Whitefish Concentration (Reference)	$C_{WF\ (Ref)}$	-	3.56E-02	3.56E-02	3.56E-02	3.56E-02	mg/kg fw	Appendix C, Table C.7
Food Intake (Aquatic Animals)	IR_{AA}	-	1.87E+01	5.95E+01	5.81E+01	8.47E+01	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Northern Pike (Reference)	$IF_{NP\ (Ref)}$	-	2.50E-01	2.50E-01	2.50E-01	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Whitefish (Reference)	$IF_{WF\ (Ref)}$	-	2.50E-01	2.50E-01	2.50E-01	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Northern Pike (PLS)	$IF_{NP\ (PLS)}$	-	2.50E-01	2.50E-01	2.50E-01	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Whitefish (PLS)	$IF_{WF\ (PLS)}$	-	2.50E-01	2.50E-01	2.50E-01	2.50E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	16.5	32.9	59.7	70.7	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	1.00E+00	1.00E+00	1.00E+00	Unitless	Assumed
Fish Adjustment Factor	FAF	-	0.10	0.10	0.10	0.10	Unitless	ATSDR, 2007
Ingestion Dose (Background) (Aquatic Animals)[b]	$D_{AA}Ref$	$D_{AARef} = ((C_{NP\ (Ref)} * IF_{NP\ (Ref)} *2 + C_{WF\ (Ref)} * IF_{WF\ (Ref)} *2) * IR_{AA} * FPF * FAF) / (BW * 365)$	1.13E-05	1.80E-05	9.70E-06	1.19E-05	mg/kg/d fw	Calculated
Ingestion Dose (Total) (Aquatic Animals)	$D_{AA}Total$	$D_{AATotal} = ((C_{NP\ (PLS)} * IF_{NP\ (PLS)} + C_{WF\ (PLS)} * IF_{WF\ (PLS)} + C_{NP\ (Ref)} * IF_{NP\ (Ref)} + C_{WF\ (Ref)}) * IF_{WF\ (Ref)}) * IR_{AA} * FPF * FAF) / (BW * 365)$	1.25E-05	1.99E-05	1.07E-05	1.32E-05	mg/kg/d fw	Calculated
Ingestion Dose (Incremental) (Aquatic Animals)	$D_{AA}Incr$	$D_{AA}Incr = D_{AA}Total - D_{AA}Ref$	1.16E-06	1.84E-06	9.91E-07	1.22E-06	mg/kg/d fw	Calculated
Terrestrial Animal Ingestion Dose								
Moose Concentration (PLS)	$C_{M\ (PLS)}$	-	9.26E-02	9.26E-02	9.26E-02	9.26E-02	mg/kg fw	Appendix C, Table C.7
Moose Organs Concentration (PLS)	$C_{MO\ (PLS)}$	-	7.87E-01	7.87E-01	7.87E-01	7.87E-01	mg/kg fw	Appendix C, Table C.7
Beaver Concentration (PLS)	$C_{B\ (PLS)}$	-	5.72E-02	5.72E-02	5.72E-02	5.72E-02	mg/kg fw	Appendix C, Table C.7
Mallard Concentration (PLS)	$C_{Mal\ (PLS)}$	-	6.76E-02	6.76E-02	6.76E-02	6.76E-02	mg/kg fw	Appendix C, Table C.7
Grouse Concentration (PLS)	$C_{G\ (PLS)}$	-	3.73E-02	3.73E-02	3.73E-02	3.73E-02	mg/kg fw	Appendix C, Table C.7
Store Food Concentration (PLS)	$C_{SF\ (PLS)}$	-	6.60E-03	6.60E-03	6.60E-03	6.60E-03	mg/kg fw	Table 2-11, IMPACT Model Report
Moose Concentration (Reference)	$C_{M\ (Ref)}$	-	5.87E-02	5.87E-02	5.87E-02	5.87E-02	mg/kg fw	Appendix C, Table C.7
Moose Organs Concentration (Reference)	$C_{MO\ (Ref)}$	-	4.99E-01	4.99E-01	4.99E-01	4.99E-01	mg/kg fw	Appendix C, Table C.7
Beaver Concentration (Reference)	$C_{B\ (Ref)}$	-	5.56E-02	5.56E-02	5.56E-02	5.56E-02	mg/kg fw	Appendix C, Table C.7
Mallard Concentration (Reference)	$C_{Mal\ (Ref)}$	-	5.77E-02	5.77E-02	5.77E-02	5.77E-02	mg/kg fw	Appendix C, Table C.7
Grouse Concentration (Reference)	$C_{G\ (Ref)}$	-	3.71E-02	3.71E-02	3.71E-02	3.71E-02	mg/kg fw	Appendix C, Table C.7
Store Food Concentration (Reference)	$C_{SF\ (Ref)}$	-	6.60E-03	6.60E-03	6.60E-03	6.60E-03	mg/kg fw	Table 2-11, IMPACT Model Report
Food Intake (Terrestrial Animals)	IR_{TA}	-	3.86E+02	6.00E+02	6.21E+02	6.09E+02	kg/y fw	Table 2-8, IMPACT Model Report
Local Intake Fraction of Moose (PLS)	$IF_{M\ (PLS)}$	-	3.21E-03	4.91E-03	8.51E-03	1.69E-02	Unitless	Table 2-10, IMPACT Model Report

Table C.26: Sample Calculation - Composite Subsistence Harvester (Patterson Lake South) Dose and Cancer Risk Calculations for Arsenic (NEW)

Parameter	Symbol	Calculation	Arsenic					
			1 yr Old[a]	Child	Teen	Adult	Unit	Source
Local Intake Fraction of Moose Organs (PLS)	$IF_{MO\ (PLS)}$	-	2.96E-03	5.31E-03	5.40E-03	7.52E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Beaver (PLS)	$IF_{B\ (PLS)}$	-	7.02E-03	1.36E-02	2.33E-02	4.68E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Mallard (PLS)	$IF_{Mal\ (PLS)}$	-	8.00E-04	1.62E-03	1.82E-03	2.84E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Grouse (PLS)	$IF_{G\ (PLS)}$	-	2.84E-03	5.76E-03	6.45E-03	1.01E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Store Food (PLS)	$IF_{SF\ (PLS)}$	-	4.83E-01	4.69E-01	4.55E-01	4.16E-01	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Moose (Reference)	$IF_{M\ (Ref)}$	-	3.21E-03	4.91E-03	8.51E-03	1.69E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Moose Organs (Reference)	$IF_{MO\ (Ref)}$	-	2.96E-03	5.31E-03	5.40E-03	7.52E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Beaver (Reference)	$IF_{B\ (Ref)}$	-	7.02E-03	1.36E-02	2.33E-02	4.68E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Mallard (Reference)	$IF_{Mal\ (Ref)}$	-	8.00E-04	1.62E-03	1.82E-03	2.84E-03	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Grouse (Reference)	$IF_{G\ (Ref)}$	-	2.84E-03	5.76E-03	6.45E-03	1.01E-02	Unitless	Table 2-10, IMPACT Model Report
Local Intake Fraction of Store Food (Reference)	$IF_{SF\ (Ref)}$	-	4.83E-01	4.69E-01	4.55E-01	4.16E-01	Unitless	Table 2-10, IMPACT Model Report
Human Adult Body Mass	BW	-	16.5	32.9	59.7	70.7	kg	Health Canada, 2021
Food Processing Factor	FPF	-	1.00E+00	1.00E+00	1.00E+00	1.00E+00	Unitless	Assumed
Moose adjustment factor	MAF	-	0.59	0.59	0.59	0.59	Unitless	Laird and Chan, 2013
Moose organs adjustment factor	MOAF	-	0.19	0.19	0.19	0.19	Unitless	Laird and Chan, 2013
Ingestion Dose (Background) (Terrestrial Animals)[b]	$D_{TA}Ref$	$D_{TARef} = ((CM_{(Ref)} * IF_{M\ (Ref)} * 2 * MAF + C_{MO\ (Ref)} * IF_{MO\ (Ref)} * 2 * MOAF + C_{B\ (Ref)} * IF_{B\ (Ref)} * 2 + C_{Mal\ (Ref)} * IF_{Mal\ (Ref)} * 2 + C_{G\ (Ref)} * IF_{G\ (Ref)} * 2 + C_{SF\ (Ref)} * IF_{SF\ (Ref)} * 2) * IR_{TA} * FPF) / (BW * 365)$	5.29E-04	4.83E-04	3.10E-04	3.39E-04	mg/kg/d fw	Calculated
Ingestion Dose (Total) (Terrestrial Animals)	$D_{TA}Total$	$D_{TARef} = ((C_{M\ (PLS)} * IF_{M\ (PLS)} * MAF + C_{MO\ (PLS)} * IF_{MO\ (PLS)} * MOAF + C_{B\ (PLS)} * IF_{B\ (PLS)} + C_{Mal\ (PLS)} * IF_{Mal\ (PLS)} + C_{G\ (PLS)} * IF_{G\ (PLS)} + C_{SF\ (PLS)} * IF_{SF\ (PLS)} + C_{M\ (Ref)} * IF_{M\ (Ref)} * MAF + C_{MO\ (Ref)} * IF_{MO\ (Ref)} * MOAF + C_{B\ (Ref)} * IF_{B\ (Ref)} + C_{Mal\ (Ref)} * IF_{Mal\ (Ref)} + C_{G\ (Ref)} * IF_{G\ (Ref)} + C_{SF\ (Ref)} * IF_{SF\ (Ref)}) * IR_{TA} * FPF) / (BW * 365)$	5.45E-04	5.04E-04	3.25E-04	3.59E-04	mg/kg/d fw	Calculated
Ingestion Dose (Incremental) (Terrestrial Animals)	$D_{TA}Incr$	$D_{TA}Incr = D_{TA}Total - D_{TA}Ref$	1.57E-05	2.13E-05	1.48E-05	2.01E-05	mg/kg/d fw	Calculated
Adult Subsistence Harvester Total Dose and ILCR								
Age Dependent Adjustment Factor	$ADAF_i$	-	1	1	1	1	Unitless	Health Canada, 2021
Exposure Duration	ED	-	4.5	7	8	60	yr	Health Canada, 2021
Life Expectancy	LE	-	80	80	80	80	yr	Health Canada, 2021
Total Incremental Ingestion Dose	D_{total}	$D_{total} = D_{TPIncr} + D_{AAIncr} + D_{TAIncr}$	1.71E-05	2.34E-05	1.60E-05	2.15E-05	mg/kg/d fw	Calculated
Lifetime Average Daily Dose	$LADD_i$	$LADD = D_{total} * ED/LE$	9.61E-07	2.05E-06	1.60E-06	1.61E-05	mg/kg/d fw	Calculated
Slope Factor	SF	-	1.80E+00	1.80E+00	1.80E+00	1.80E+00	$(mg/kg\ d)^{-1}$	Table 5-16
Incremental Lifetime Cancer Risk	$ILCR_i$	$ILCR_i = SF * ADAF_i * LADD_i$	1.73E-06	3.69E-06	2.88E-06	2.90E-05	Unitless	Calculated
Incremental Lifetime Cancer Risk Composite	ILCR	$ILCR = \Sigma\ SF * ADAF_i * LADD_i$				3.73E-05	Unitless	Calculated

Notes:

a. "1yr Old" is roughly equivalent to Health Canada toddler

b. The "2" represents the adjustment to account for the entire local intake fraction obtained from the reference location.